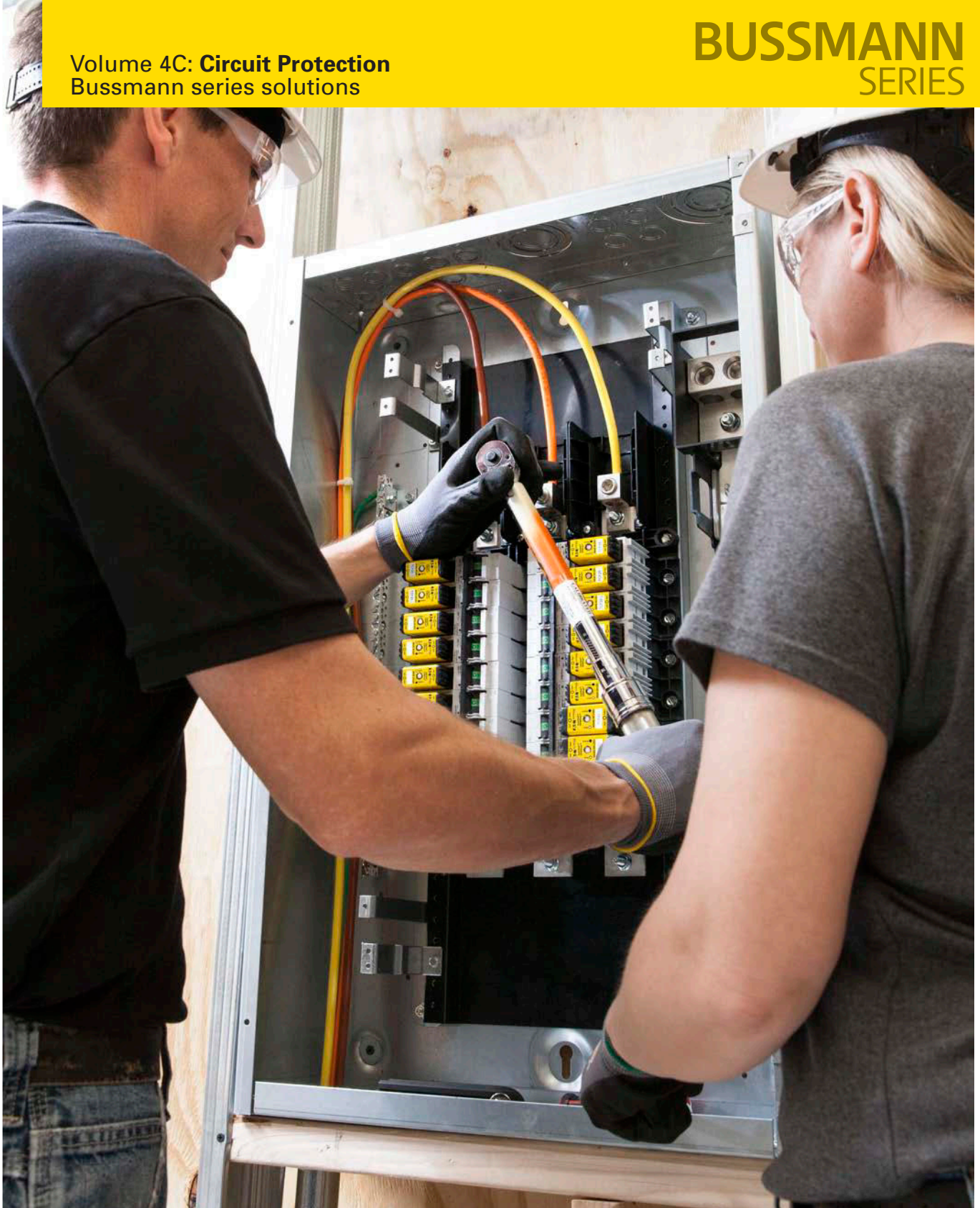




Don't miss a sale or an opportunity to upgrade your fuse protection

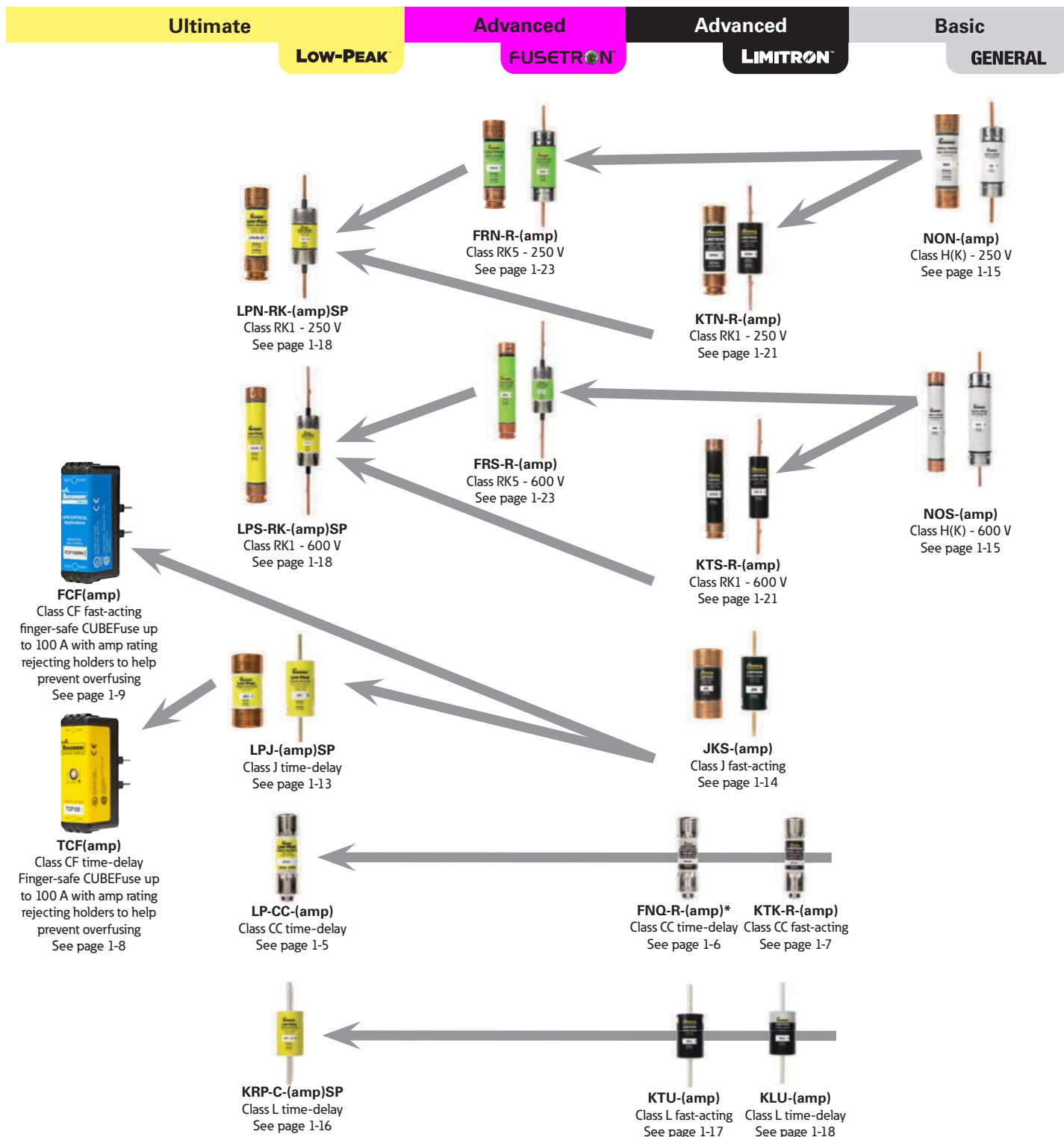
Three tiers offer distinct levels of circuit protection

- 1. Ultimate** - Unique element designs deliver a powerful combination of operating characteristics in one fuse — fast short-circuit protection, current limitation, and time-delay with up to 300 kA interrupting ratings.
- 2. Advanced** - Choose between fast-acting, short-circuit, current limiting protection or time-delay energy efficient, current limiting protection based on the application with 200 kA interrupting ratings.
- 3. Basic** - Basic single-element protection for service, feeder and branch circuit applications with up to 100 kA interrupting ratings.

The arrows below show you the way

CUBEFuse™ protection

For finger-safe protection in a small footprint up to 600 V and 100 A, upgrade to the time-delay or fast-acting CUBEFuse. Amp rating rejection feature helps prevent overfusing in the CUBEFuse holder (page 1-11) or CCP2-CF UL 98 disconnect switch (page 11-6).



The power of space

From the revolutionary Bussmann™ series CUBEFuse to its unique fuse holder or Compact Circuit Protector, we're continually innovating to give you products that help you go big, by going small.

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Low-Peak™ Upgrade program and fuse inventory consolidation	

Bussmann series circuit protection solutions comply with major industrial standards and agency requirements such as: BS, IEC, DIN, UL, NEMA, CSA, CE, C-UL, etc. and are manufactured at facilities that are ISO 9000 certified.

This catalog is intended to present product data and provide technical information that will help the end user with design application. Eaton reserves the right, without notice, to change design or construction or any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this catalog. Once a product has been selected, it should be tested by the user in all possible applications. Further, Eaton takes no responsibility for errors or omissions contained in this catalog, or for misapplication of any Eaton product. Extensive product information is available in the Eaton product data sheets available on line at Eaton.com/bussmannseries.

Selecting fused circuit protection

The following fuse selection tables are based on the 2017 NEC and provide fuse recommendations for the listed applications.

These are only suggestions. Final fuse selection should be performed by qualified personnel able to fully assess an application's circuit protection requirements.

If you need assistance in selecting a fuse, contact the Eaton Application Engineering team Monday through Friday, 7:00 a.m. — 5:00 p.m. Central time.

Application Engineering can be reached via phone (toll-free 855-287-7626) and email (FuseTech@Eaton.com).

To locate the recommended fuse product pages, use the index starting on page 16-4.

Ballasts

Location	Type	Notes	Fuse recommendation	Fuse holder recommendation
Indoor	Fluorescent	Consult fixture manufacturer for size and type	GLR, GMF, GRF	HLR
			GLQ, GMQ	HLQ
	All other (mercury, sodium, etc.)	Consult fixture manufacturer for size and type	BAF, KTK, FNM, FNQ	HPF, HPS
			KTK-R, FNQ-R, LP-CC	HPS-RR, HPF-RR
			BBS	HPS-L, HPF-L
			SC up to 15 amps	HPF-EE, HPS-EE
			SC 20 amp	HPF-JJ, HPS-JJ
			SC 25-30 amps	HPF-FF, HPS-FF
Outdoor	Mercury, sodium, etc.	Consult fixture manufacturer for size and type.	BAF, KTK, FNM, FNQ	HEB, HEX, HPC-D
			KTK-R, FNQ-R, LP-CC	HEY, HEZ

Capacitors (NEC 460)

Protected by	Sizing	Fuse/volt recommendation
Time-delay fuses	150% to 175% of Full Load Current (FLC)	Up to 250 V: LPN-RK_SP, FRN-R Up to 600 V: LPS-RK_SP, FRS-R, LPJ_SP, LP-CC, FNQ-R, TCF
Non time-delay fuses	250% to 300% of Full Load Current (FLC)	Up to 250 V: KTN-R Up to 300 V: JJN Up to 600 V: KTS-R, JKS, KTK-R, JJS, FCF_RN
On loadside of motor running overcurrent device	Protection recommended as shown, but not required	—

Electric heat (NEC 424)

Heating type	Sizing	Fuse/volt recommendation
Space heating	125% or next size larger but in no case larger than 60 amps for each subdivided load	Up to 250 V: LPN-RK_SP, FRN-R, NON Up to 300 V: JJN
Boilers (ASME rated and stamped vessel)	125% or next size larger but in no case larger than 150 amps for each subdivided load	Up to 480 V: SC 25 to SC 60 Up to 600 V: LPS-RK_SP, FRS-R, NOS, JJS, LPJ_SP, LP-CC, FNQ-R, JKS, KTK-R, TCF, SC 1/2 to SC 20, FCF_RN

Mains, feeders, branches (NEC 430)

Circuit type	Circuit loads	Sizing	Fuse/volt recommendation
Feeder circuits ≤ 600 A	No motor load	100% of non-continuous load plus 125% of continuous load	Up to 250 V: LPN-RK_SP, FRN-R Up to 300V: JJN Up to 600 V: LPS-RK_SP, FRS-R, JJS, LPJ_SP, LP-CC, JKS, KTK-R
	Combination motor and other loads	150% of the FLA of largest motor (if there are two or more motors of same size, one is considered to be the largest) plus the sum of all the FLA for all other motors plus 100% of non-continuous, non-motor load plus 125% of continuous, non-motor load. A maximum of 175% (or the next standard size if 175% does not correspond to a standard size) is allowed for all but wound rotor and all DC motors.	Up to 250 V: LPN-RK_SP, FRN-R Up to 600 V: LPS-RK_SP, FRS-R, LPJ- SP, LP-CC
	Motor loads	150% of the FLA of largest motor (if there are two or more motors of same size, one is considered to be the largest) plus the sum of all the FLA for all other motors. A maximum of 175% (or the next standard size if 175% does not correspond to a standard size) is allowed for all but wound rotor and all DC motors.	
Main, branch and feeder circuits (601-6000 A)	—	150% to 225% of full load current of largest motor plus 100% of full load current of all other motors plus 125% of continuous non-motor load plus 100% of non-continuous non-motor load	Up to 600 V: KRP-C_SP

Motor loads (NEC 430)

Circuit voltage	Fuse type	Fuse sized for	Sizing	Fuse/volt recommendation
600 V and less	Time-delay fuses	Backup overload with motor starter and short-circuit protection	125% of motor FLA or next size larger	Up to 250 V: FRN-R Up to 600 V: FRS-R
			130% of motor FLA or next size larger	Up to 250 V: LPN-RK_SP Up to 600 V: LPS-RK_SP
		Short-circuit only	175% of motor FLA or next size larger. (If 175% does not correspond to a standard size). If this will not allow motor to start, due to higher than normal inrush currents or longer than normal acceleration times (5 seconds or greater), fuse may be sized up to 225% or next size smaller. NOTE: 150% for wound rotor and all DC motors.	Up to 250 V: LPN-RK_SP, FRN-R Up to 600 V: LPS-RK_SP, FRS-R, LPJ_SP, TCF
	Non-time delay and all Class CC fuses	Short-circuit only	Maximum of 300% of motor FLA or next size larger (if 300% does not correspond to a standard size). If this will not allow motor to start due to higher than normal inrush currents or longer than normal acceleration times (5 seconds or greater), fuses through 600 amps may be sized up to 400% or next size smaller. Note: 150% for wound rotor and all DC motors.	Up to 250 V: KTN-R Up to 300 V: JJN Up to 600 V: KTS-R, JJS, LP-CC, JKS, KTK-R, FCF_RN
Above 600 V	—	—	Compare the minimum melting time-current characteristics of the fuses with the time-current characteristics of the overload relay curve. The size fuse which is selected should be such that short-circuit protection is provided by the fuse and overload protection is provided by the controller overload relays.	Up to 2400 V: JCH, JCK, JCK-A, JCK-B, 2ACLS, 2BCLS, 2CLS, 2HCLS Up to 4800 V: JCL, JCL-A, JCL-B, 5ACLS, 5BCLS, 5CLS, 5HCLS Up to 7200 V: 7BCLS, 7.2WKMSJ, 8ACLS, 8CLS

Solenoids (coils)

Fuse type	Sizing	Fuse/volt recommendation
Branch circuit	Size at 125% or next size smaller	Up to 250 V: LPN-RK_SP, FRN-R (best) Up to 600 V: LPS-RK_SP, FRS-R, LPJ_SP, LP-CC, FNQ-R, TCF
Supplemental	Size at 125% or next size larger	Up to 32 V: MDL 9-30 A, FNM 20-30 A Up to 125 V: MDA 25-30 A, FNM 12-15 A Up to 250 V: MDL 1/16-8 A, MDA 2/10-20 A, FNM 1/10-10 A, MDQ 1/100-7 A Up to 500 V: FNQ 1/10-30 A

Transformers 600 V nominal or less (NEC 450.3)

Protection type	Thermal overload protection	Transformer impedance	Rated current	Optimum protection*	NEC maximums	Fuse/volt recommendation
Primary only (Note: components on the secondary still need overcurrent protection)	—	—	Primary < 2 amps	125% or next size larger	300% or next size smaller (see NEC 430.72(C) for control circuit transformer maximum of 500%)	Up to 250 V: LPN-RK_SP, FRN-R Up to 600 V: KRP-C_SP, LPJ_SP, LPS-RK_SP, FNQ-R, FRS-R, TCF
			Primary ≥ 2 amps but < 9 amps	125% or next size larger	167% or next size smaller	
			Primary ≥ 9 amps	125% or next size larger	125% or next size larger**	
Primary and secondary	Without	—	Secondary < 9 amps (see A)	Primary and secondary fuses at 125% of primary and secondary FLA or next size larger	% of primary FLA (or next FLA size smaller) A = 250% B = 250% C = 600% D = 600% E = 400% F = 400% % of secondary FLA A = 167% or next size smaller B = 125% or next size larger** C = 167% or next size smaller D = 125% or next size larger** E = 167% or next size smaller F = 125% or next size larger**	
			Secondary ≥ 9 amps (see B)			
	With	≤ 6%	Secondary < 9 amps (see C)			
			Secondary ≥ 9 amps (see D)			
		> 6% but < 10%	Secondary < 9 amps (see E)			
			Secondary ≥ 9 amps (see F)			

* When sizing the primary fuse for optimum protection, verify the inrush current with the transformer manufacturer and review fuse time-current characteristics.

**When 125% of FLA corresponds to a standard rating, the next larger size is not permitted.

Transformers over 600 V nominal (NEC 450.3)
Supervised installations

Protection for	Transformer impedance	Primary Sizing	Secondary volts	Secondary sizing	Fuse/volt recommendation
Primary only	N/A	Code maximum of 250% or next standard size if 250% does not correspond to a standard rating Note: Components on the secondary still need overcurrent protection	N/A	N/A	Up to 250 V: LPN-RK_SP, FRN-R Up to 600 V: LPS-RK_SP, LPJ-_SP, KRP-C_SP, FRS-R, FNQ-R, TCF Up to 2.475 kV: 2NCLPT, 2CLPT Up to 2.75 kV: 2CLE, 2HLE
Primary and secondary	≤ 6%	At code maximum of 300%	> 600 V	At code maximum of 250%	Up to 2750/5500 V: JCW
			≤ 600 V	At code maximum of 250%	Up to 5.5 kV: 5HLE, 5CLE, 5HCL, 5BHCL, 5BHLE, 5AHLE, JCY, MV05, 5.5 ABWNA, 5.5 AMWNA, 5.5 FFN
	> 6% but < 10%	At code maximum of 300%	> 600 V	At code maximum of 225%	7 Up to 7.2 kV: 2 AMWNA, 7.2 TDLSJ, 7.2 TFLSJ
			≤ 600 V	At code maximum of 250%	Up to 8.3 kV: 8HLE, 8CLE, 8BHLE, 8AHLE, 8CLPT, 8NCLPT, 8HCL, 8.25 FFN Up to 15.5 kV: 15CLPT, 15NCLPT, 15CLE, 15HLE, 15BHLE, 15LHLE, 15HCL, 15BHCL, MV155, 15.5 CAVH Up to 17.5 kV: 17.5 CAV, 17.5 TDM Up to 24 kV: 24 TDM, 24 TFM, 24 FFM Up to 36 kV: 36 CAV, 36 TDQ, 36 TFQ Up to 38 kV: 38CLPT, 38 CAV

Unsupervised installations

Transformer impedance	Primary Sizing	Secondary volts	Secondary sizing	Fuse/volts recommendation
≤ 6%	At code maximum of 300% or next standard size if 300% does not correspond to a standard rating	> 600 V	At code maximum of 250% or next standard size if 250% does not correspond to a standard rating	Up to 250 V: LPN-RK_SP, FRN-R Up to 600 V: LPS-RK_SP, LPJ-_SP, KRP-C_SP, FRS-R, FNQ-R, TCF Up to 2475 V: 2NCLPT, 2CLPT Up to 2.75 kV: 2CLE, 2HLE Up to 2750/5500 V: JCW
		≤ 600 V	At code maximum of 125% or next standard size if 125% does not correspond to a standard rating	
> 6% but < 10%	At code maximum of 300% or next standard size if 300% does not correspond to a standard rating	> 600 V	At code maximum of 225% or next standard size if 225% does not correspond to a standard rating	Up to 5.5 kV: 5HLE, 5CLE, 5HCL, 5BHCL, 5BHLE, 5AHLE, JCY, MV05, 5.5 ABWNA, 5.5 AMWNA, 5.5 FFN Up to 7.2 kV: 7.2 AMWNA, 7.2 TDLSJ, 7.2 TFLSJ
		≤ 600 V	At code maximum of 125% or next standard size if 125% does not correspond to a standard rating	Up to 8.3 kV: 8HLE, 8CLE, 8BHLE, 8AHLE, 8CLPT, 8NCLPT, 8HCL, 8.25 FFN Up to 15.5 kV: 15CLPT, 15NCLPT, 15CLE, 15HLE, 15BHLE, 15LHLE, 15HCL, 15BHCL, MV155, 15.5 CAVH Up to 17.5 kV: 17.5 CAV, 17.5 TDM Up to 24 kV: 24 TDM, 24 TFM, 24 FFM Up to 36 kV: 36 CAV, 36 TDQ, 36 TFQ Up to 38 kV: 38CLPT, 38 CAV

Solid state devices (diodes, SCRs, triacs, transistors)

Protection type	Sizing	Fuse/volts recommendation
Short-circuit only	F, S, K, and 170M fuse families sized up to several sizes larger than full load RMS or DC rating of device	Up to 130 V: FWA Up to 250 V: FWX Up to 500 V: FWH Up to 600 V: FWC, KAC, KBC Up to 700 V: FWP, 170M_, SPP Up to 1000 V: FWJ, 170M_, SPJ

Do you know about the new 2017 NEC® SCCR requirements?



Finding out is easy.

Eaton's Bussmann™ series handbook *Code changes affecting Short-Circuit Current Ratings based on the 2017 NEC* will help you:

Know why SCCR is important.

Understand hazards associated with insufficient SCCR.

Know what specific NEC chapters, articles, parts and sections are involved.

Comply with Code requirements for marking and documenting SCCR.

If you're designing, installing or inspecting equipment, download your copy at Eaton.com/nec2017sccr.

Or, check out our comprehensive SCCR resources at Eaton.com/bussmannseries/SCCR.



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The power of space

The revolutionary Bussmann™ series Low-Peak™ CUBEFuse™ delivers the smallest footprint compared to any Class J or RK fuse solution — requiring up to 70% less space when combined with its unique fuse holder.



Contents

Description			Section page
Fuse holder and block selection guide			2
Fuse reducers			
Branch circuit fuse dimensions			3-4
Fuse class	Catalog symbol	Volts	
CC	LP-CC	600 V	5
	FNQ-R		6
	KTK-R		7
CF	TCF	600 V	8
	FCF		9
	WCF	690 V	10
	TCFH_ Class CF holders	600 V	11
G	SC	600/480 V	12
J	LPJ-_SP	600 V	13
	LPJ-_SPI indicator		
	JKS		14
H(K)	NON	250 V	15
	NOS	600 V	
L	KRP-C_ SP	600 V	16
	KRP-CL (225 to 600 A)		17
	KTU		
	KLU		18
RK1	LPN-RK_ SP	250 V	18-20
	LPN-RK_ SPI indicator		
	LPS-RK_ SP	600 V	
	LPS-RK_ SPI indicator		
	RK5	KTN-R	250 V
KTS-R		600 V	
T	FRN-R	250 V	23-24
	FRN-R_ID indicator		
	FRS-R	600 V	
	FRS-R_ID indicator		
T	JJN	300 V	25-26
	JJS	600 V	
Plug fuses	SL, TL and W	125 V	27
	P, S, T and TC		28
	MB Edison base circuit breakers		29
	SA fuse adapters		
	Box cover units		30

Low voltage,
branch circuit fuses

For conductor protection, see cable limiters in Section 2, page 3.

Fuse holder and block selection guide

Catalog pages for the blocks and holders are denoted parenthetically "()" next to their catalog symbol.

Fuse class	Catalog symbol	Blocks	DIN-Rail holders	Panel mount holders	In-line holders
CC	FNO-R KTK-R LP-CC	BCM (8-6) 3743 (8-14) 4421 (8-14) 4515 (8-14)	CHCC (8-8) OPM-1038 (8-12) OPM-NG (8-13) CCP2-CC ^{†††} (11-2)	HPF-RR (8-43) HPS-RR (8-45) CCPLP ^{†††} (30 A) (11-32)	HEY (8-53) HEZ (8-52)
CF	FCF TCF WCF ^{††}	TCFH (1-11) TCFHNW (1-11) (Panel and DIN-Rail mount)	CCP2-CF ^{†††} (11-6) CCP2B ^{†††} (11-29)	—	—
G	SC	BG (8-15) G (8-15)	—	CCPLP ^{†††} (20 A) (11-32) HPG-EE (15 A) (8-44) HPS-EE (15 A) (8-45) HPS-FF (30 A) (8-45) HPS-JJ (20 A) (8-45)	HEC (30 A) (8-49) HEG (15 A) (8-49) HEH (20 A) (8-49) HEJ (60 A) (8-49)
H(K) 250 V	NON (250 V)	HM25_ (8-19) HM25060_MW* (8-24)	—	—	—
H(K) 600 V	NOS (600 V)	HM60_ (8-19) HM60030_MW* (8-24)	—	—	—
J	LPJ JKS	JM60_ (8-31) JM60_MW* (8-33) JP60030 (8-30)	CH_J (8-28) JT(N) (8-29)	—	—
L	KRP-C KRP-CL KLU KTU	51215** 51235**	—	—	—
RK1 250 V	LPN-RK KTN-R	RM25_ (8-21) RM25_MW* (8-26)	—	—	—
RK1 600 V	LPS-RK KTS-R	RM60_ (8-21) RM60_MW* (8-26)	—	—	—
RK5 250 V	FRN-R	RM25_ (8-21) RM25_MW* (8-26)	—	—	—
RK5 600 V	FRS-R	RM60_ (8-21) RM60_MW* (8-26)	—	—	—
T 300 V	JJN	T300 (8-35)	—	—	—
T 600 V	JJS	T600 (8-37)	—	—	—
T up to 600 V	JJN/JJS	BH-0_, BH-1_, BH-3_† (8-39)	—	—	—
Plug fuses	P, T, TC, TL, W Edison base	Box cover units (1-30)	—	—	—
	S, SL rejection base	SA adapters (1-29)	—	—	—

* Power distribution fuse blocks.

** Up to 800 A, contact customer satisfaction at 855-287-7626 for more information.

† Various blade bolt-on up to 700 A, see data sheets for limitations.

†† WCF (wind CUBEFuse) is rated to 690 V and is not a UL Listed Class CF fuse and can only be applied in the TCFHNW holder.

††† UL 98 Listed disconnect switch, available in 1-, 2- and 3-pole versions.

250 V Class R fuse reducers

Equipment fuse clip amps	Desired fuse (case) amp size	Catalog no. (pairs)
60	30	NO.263-R
100	30	NO.213-R
	60	NO.216-R
200	60	NO.226-R
	100	NO.2621-R
400	100	NO.2641-R
	200	NO.242-R
600	100	NO.2661-R
	200	NO.2662-R
	400	NO.2664-R*

* Single reducer only (pair not required).

600 V Class R fuse reducers

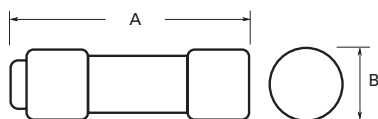
Equipment fuse clip amps	Desired fuse (case) amp size	Catalog no. (pairs)
60	30	NO.663-R
100	30	NO.216-R
	60	NO.616-R
200	60	NO.626-R
	100	NO.2621-R
400	100	NO.2641-R
	200	NO.642-R
600	100	NO.2661-R
	200	NO.2662-R
	400	NO.2664-R*

* Single reducer only (pair not required).

Branch circuit fuse dimensions

Class CC — in (mm)

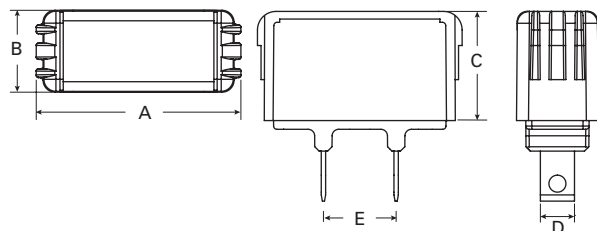
LP-CC, FNQ-R, KTK-R and LP-CC



Amp range	A	B
Up to 30	1.5 (38)	0.41 (10)

Class CF — in (mm)

TCF, FCF and WCF

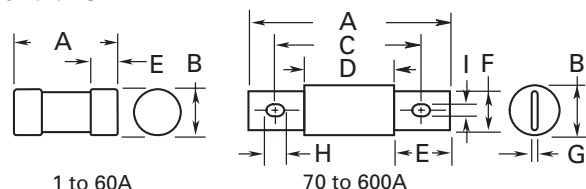


Amp range	A	B	C	D	E
1-15				0.23 (6)	
17-1/2*	1.88 (48)	0.75 (19)	1.0 (25)	0.27 (7)	
20					0.67 (17)
25-30				0.31 (8)	
35-40				0.36 (9)	
45-50	2.13 (54)		1.13 (29)	0.44 (11)	
60		1.0 (25)			
70				0.49 (12)	0.64 (16)
80-90	3.01 (76)		1.26 (32)	0.57 (14)	
100					

* Time-delay (TCF) only.

Class J — in (mm)

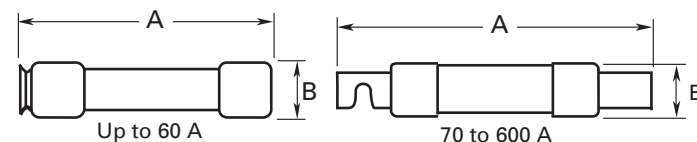
LPJ and JKS



Amp range	A	B	C	D	E	F	G	H	I
1-30	2.25 (57)	0.81 (21)	—	—	0.5 (13)	—	—	—	—
35-60	2.38 (60)	1.06 (27)	—	—	0.63 (16)	—	—	—	—
70-100	4.63 (118)	1.13 (29)	3.63 (92)	2.63 (67)	1.0 (25)	0.75 (29)	0.13 (3)	0.41 (10)	0.28 (7)
110-200	5.75 (146)	1.63 (41)	4.38 (111)	3.0 (76)	1.38 (35)	1.13 (29)	0.19 (5)	0.38 (10)	0.28 (7)
225-400	7.12 (181)	2.11 (54)	5.25 (133)	3.26 (83)	1.87 (48)	1.62 (41)	0.25 (6)	0.56 (14)	0.4 (10)
450-600	8.0 (203)	2.6 (66)	6.0 (152)	3.31 (84)	2.12 (54)	2.0 (51)	0.53 (14)	0.72 (18)	0.53 (14)

Class RK1 and RK5 — in (mm)

FRN-R, KTN-R LPN-RK (250 V) and FRS-R, KTS-R LPS-RK (600 V)

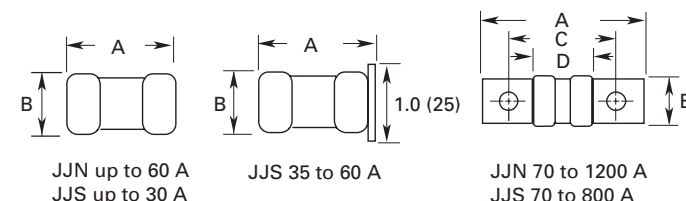


Basic dimensions are same as Class H, one-time (NON and NOS) fuses. **Note:** relating to dimensional compatibility these fuses can replace existing Class H, RK1 and RK5 fuses.

Amp range	250 V fuses		600 V fuses	
	A	B	A	B
Up to 30	2 (51)	0.56 (14)	5.0 (127)	0.81 (21)
35-60	3 (76)	0.81 (21)	5.5 (140)	1.06 (27)
RK5 FRN-R, FRS-R, — RK1 KTN-R, KTS-R				
70-100	5.88 (149)	1.06 (27)	7.88 (200)	1.34 (34)
110-200	7.13 (181)	1.56 (40)	9.63 (245)	1.84 (47)
225-400	8.63 (219)	2.38 (61)	11.63 (295)	2.59 (66)
450-600	10.38 (264)	2.88 (73)	13.38 (340)	3.13 (80)
RK1 LPN-RK, LPS-RK				
70-100	5.88 (149)	1.16 (30)	7.88 (200)	1.16 (30)
110-200	7.13 (181)	1.66 (42)	9.63 (245)	1.66 (42)
225-400	8.63 (219)	2.38 (61)	11.63 (295)	2.38 (61)
450-600	10.38 (264)	2.88 (73)	13.38 (340)	2.88 (73)

Class T — in (mm)

JJN (300 V) and JJS (600 V)

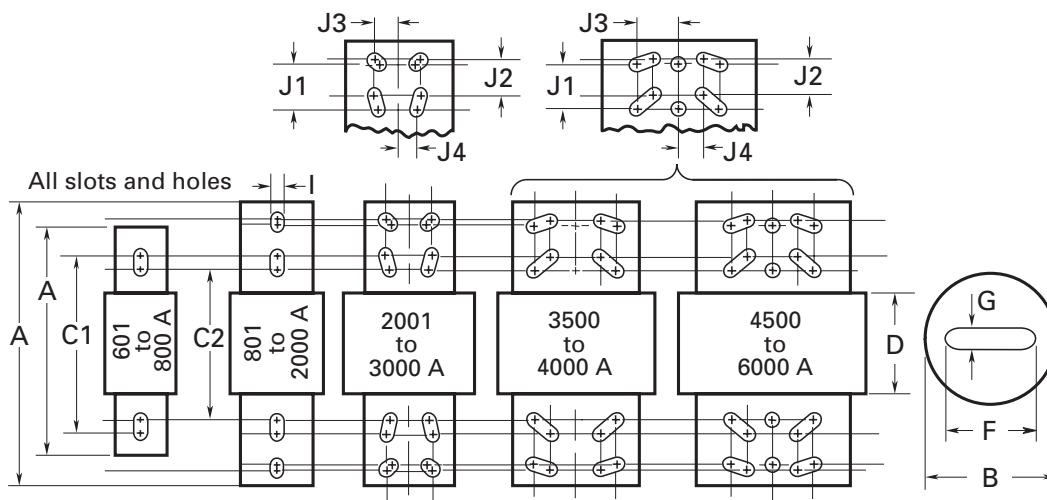


Amp range	A	B	C	D
300 V JJN				
Up to 30	0.88 (22)	0.41 (10)	—	—
35-60	0.88 (22)	0.56 (14)	—	—
70-100	2.16 (55)	0.75 (19)	1.56 (40)	0.84 (21)
110-200	2.44 (62)	0.88 (22)	1.69 (43)	0.84 (21)
225-400	2.75 (70)	1.00 (25)	1.84 (47)	0.86 (22)
450-600	3.06 (78)	1.25 (32)	2.03 (52)	0.88 (22)
601-800	3.38 (86)	1.75 (45)	2.22 (56)	0.89 (23)
801-1200	4.00 (102)	2.00 (51)	2.53 (64)	1.08 (27)
600 V JJS				
Up to 30	1.50 (38)	0.56 (14)	—	—
35-60	1.56 (40)	0.81 (21)	—	—
70-100	2.95 (75)	0.75 (19)	2.36 (60)	1.64 (42)
110-200	3.25 (83)	0.88 (22)	2.50 (64)	1.66 (42)
225-400	3.63 (92)	1.00 (25)	2.72 (69)	1.73 (44)
450-600	3.98 (101)	1.25 (32)	2.96 (75)	1.78 (45)
601-800	4.33 (110)	1.75 (45)	3.17 (81)	1.88 (48)

Branch circuit fuse dimensions

Class L — in (mm)

KLU, KRP-C_SP, KRP-CL, KTU



Amp range	A	B	C1	C2	D	F	G	I	J1	J2	J3	J4
601-800	8.63 (219)	2.4 (61)	6.75 (172)	5.75 (146)	3.75 (95)	2.00 (51)	0.38 (10)	0.63 (16)	—	—	—	—
801-1200	10.75 (273)	2.4 (61)	6.75 (172)	5.75 (146)	3.75 (95)	2.00 (51)	0.38 (10)	0.63 (16)	—	—	—	—
1350-1600	10.75 (273)	3.0 (76)	6.75 (172)	5.75 (146)	3.75 (95)	2.38 (60)	0.44 (11)	0.63 (16)	—	—	—	—
1800-2000	10.75 (273)	3.5 (89)	6.75 (172)	5.75 (146)	3.75 (95)	2.75 (70)	0.5 (13)	0.63 (16)	—	—	—	—
2001-2500	10.75 (273)	4.8 (122)	6.75 (172)	5.75 (146)	3.75 (95)	3.50 (89)	0.75 (19)	0.63 (16)	1.75 (45)	1.38 (35)	0.88 (22)	0.81 (21)
3000	10.75 (273)	5.0 (127)	6.75 (172)	5.75 (146)	3.75 (95)	4.00 (102)	0.75 (19)	0.63 (16)	1.75 (45)	1.38 (35)	0.88 (22)	0.81 (21)
3500-4000	10.75 (273)	5.75 (146)	6.75 (172)	5.75 (146)	3.75 (95)	4.75 (121)	0.75 (19)	0.63 (16)	1.75 (45)	1.38 (35)	1.63 (41)	0.88 (22)
4500-5000	10.75 (273)	6.25 (159)	6.75 (172)	5.75 (146)	3.75 (95)	5.25 (133)	1.0 (25)	0.63 (16)	1.75 (45)	1.38 (35)	1.63 (41)	0.88 (22)
6000	10.75 (273)	7.13 (181)	6.75 (172)	5.75 (146)	3.75 (95)	5.75 (146)	1.0 (25)	0.63 (16)	1.75 (45)	1.38 (35)	1.63 (41)	0.88 (22)

Note: KRP-CL (225-600 A) fuses have same dimensions as 601-800 A case size KTU (200-600 A) have same dimensions, except tube 3" length x 2" diameter (76 x 51 mm); terminal 1-5/8" width x 1-1/4" thick (41 x 32 mm).

LP-CC Class CC Low-Peak™ time-delay, rejection-type fuses

Time-delay, current-limiting, rejection-type fuse — 12 seconds (minimum) at 200% rated amps. For dimensions, see page 1-3.

Ratings

- Volts
 - 600 Vac (or less)
 - 300 Vdc (1/2 to 2-8/10 A and 20-30 A)
 - 150 Vdc (3-15 A)
- Amps 1/2-30 A
- IR
 - 200 kA RMS Sym.
 - 20 kA DC

RoHS
2011/65/EU



Agency information

- UL Listed Std 248-4, Class CC, Guide JDDZ, File E4273, CSA Certified, Class 1422-02, File 53787, RoHS compliant (20-30 A)*, CE

* Contact factory for RoHS compliance on other ratings.

Features

- Class CC rejection feature, with appropriate fuse block, prevents inserting lesser-rated supplementary fuses
- Time-delay coupled with Class CC current-limiting response provides close sizing on small motor and relay circuits, and maximum component short-circuit current rating protection
- 200 kA interrupting rating provides high ratings for control circuit locations
- Inventory consolidation of 13/32" x 1-1/2" supplemental fuses reduces SKU investment and minimizes potential for misapplying fuse
- Selective coordination ratio of 2:1 (within Low-Peak fuse family) prevents electrical shutdowns from extending beyond the failed circuit

Typical applications

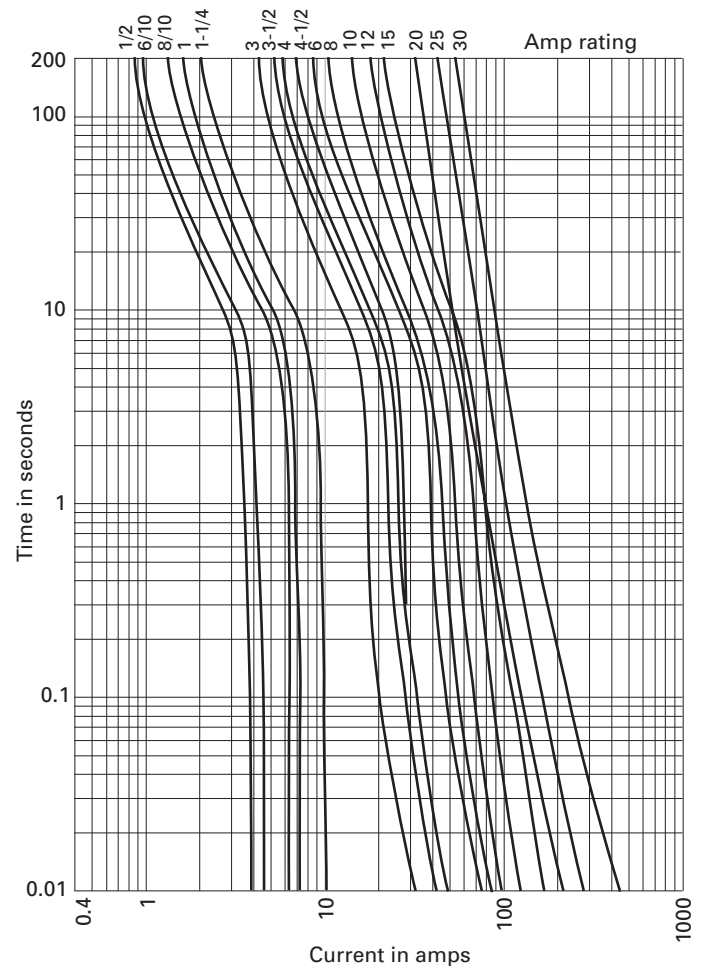
- Branch circuit protection
- Specialized circuits
- Industrial controls and panels
- Isolated, in-line fuse holder

Catalog no. (amps)

LP-CC-1/2	LP-CC-1-8 /10	LP-CC-4-1/2	LP-CC-10
LP-CC-6/10	LP-CC-2	LP-CC-5	LP-CC-12
LP-CC-8/10	LP-CC-2-1/4	LP-CC-5-6/10	LP-CC-15
LP-CC-1	LP-CC-2-1/2	LP-CC-6	LP-CC-20
LP-CC-1-1/8	LP-CC-2-8/10	LP-CC-6-1/4	LP-CC-25
LP-CC-1-1/4	LP-CC-3	LP-CC-7	LP-CC-30
LP-CC-1-4/10	LP-CC-3-2/10	LP-CC-7-1/2	
LP-CC-1-1/2	LP-CC-3-1/2	LP-CC-8	
LP-CC-1-6/10	LP-CC-4	LP-CC-9	

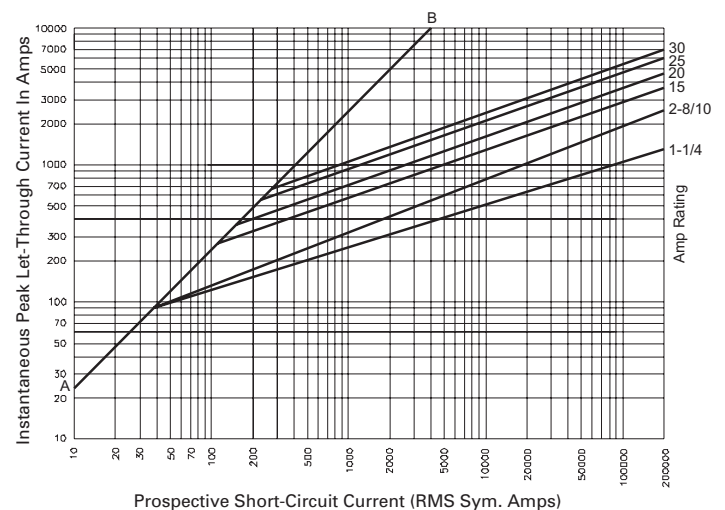
Recommended holders and blocks for Class CC fuses, see page 1-2.

Time-current characteristics — average melt



Low voltage,
branch circuit fuses

Current limitation curves



FNQ-R Class CC Limitron™ time-delay, rejection-type fuse

Time-delay, branch circuit, rejection-type fuse. For superior electrical protection, Eaton recommends upgrading FNQ-R fuse applications to Bussmann series Low-Peak LP-CC fuses, see page 1-5. For dimensions, see page 1-3.

Ratings

- Volts
 - 600 Vac (or less)
 - 300 Vdc (15-20 A)
 - 32 Vdc (self certified)
- Amps 1/4-30 A
- IR
 - 200 kA RMS Sym.
 - 20 kA DC (15 and 20 A only)



Agency information

- UL Listed, Std 248-4, Class CC, Guide JDDZ, File E4273, CSA Certified, Class 1422-01, File 53787, RoHS compliant, CE

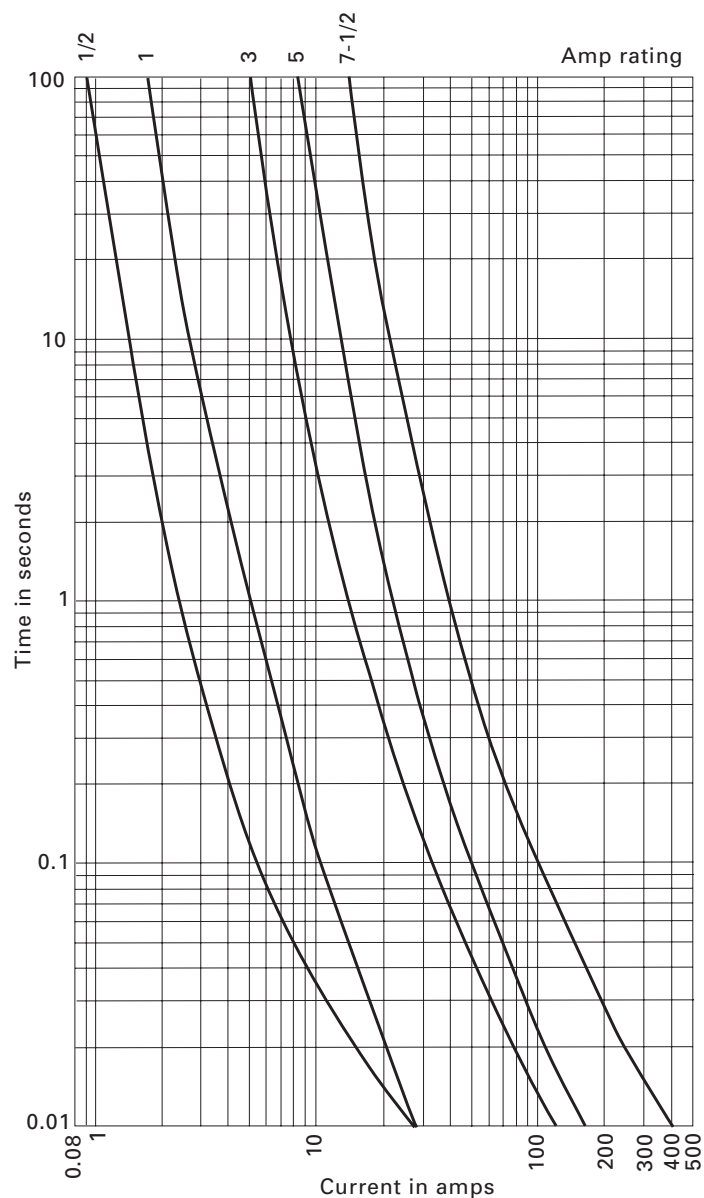
Features

- Class CC rejection feature, with appropriate fuse block, prevents inserting lesser-rated supplementary fuses
- Time-delay compatible with inrush characteristic of small control transformers
- Current limitation at Class CC levels provides maximum component short-circuit current rating protection
- 200 kA interrupting rating provides high ratings for control circuit locations

Typical applications

- Line protection, small control transformers
- Industrial controls and panels
- Isolated, in-line fuse holders

Time-current characteristics — average melt



Catalog no. (amps)

FNQ-R-1/4	FNQ-R-1-3/10	FNQ-R-3-2/10	FNQ-R-8
FNQ-R-3/10	FNQ-R-1-4/10	FNQ-R-3-1/2	FNQ-R-9
FNQ-R-4/10	FNQ-R-1-1/2	FNQ-R-4	FNQ-R-10
FNQ-R-1/2	FNQ-R-1-6/10	FNQ-R-4-1/2	FNQ-R-12
FNQ-R-6/10	FNQ-R-1-8/10	FNQ-R-5	FNQ-R-15
FNQ-R-3/4	FNQ-R-2	FNQ-R-5-6/10	FNQ-R-17-1/2
FNQ-R-8/10	FNQ-R-2-1/4	FNQ-R-6	FNQ-R-20
FNQ-R-1	FNQ-R-2-1/2	FNQ-R-6-1/4	FNQ-R-25
FNQ-R-1-1/8	FNQ-R-2-8/10	FNQ-R-7	FNQ-R-30
FNQ-R-1-1/4	FNQ-R-3	FNQ-R-7-1/2	

Recommended holders and blocks for Class CC fuses, see page 1-2.

KTK-R Class CC Limitron™ fast-acting, rejection-type fuse

Fast-acting, branch circuit, rejection-type fuse. For superior electrical protection, Eaton recommends upgrading KTK-R fuse applications to Bussmann series Low-Peak LP-CC fuses, see page 1-5. For dimensions, see page 1-3.

Ratings

- Volts 600 Vac (or less)
- Amps 1/10-30 A
- IR 200 kA RMS Sym.



Agency information

- UL Listed, Std 248-4, Class CC, Guide JDDZ, File E4273, CSA Certified, File 53787, Class 1422-02, RoHS compliant, CE

Features

- Class CC rejection feature, with appropriate fuse block, prevents inserting lesser-rated supplementary fuses
- Current limitation at Class CC levels provides maximum component short-circuit current protection
- 200 kA interrupting rating provides high ratings for control circuit locations

Typical applications

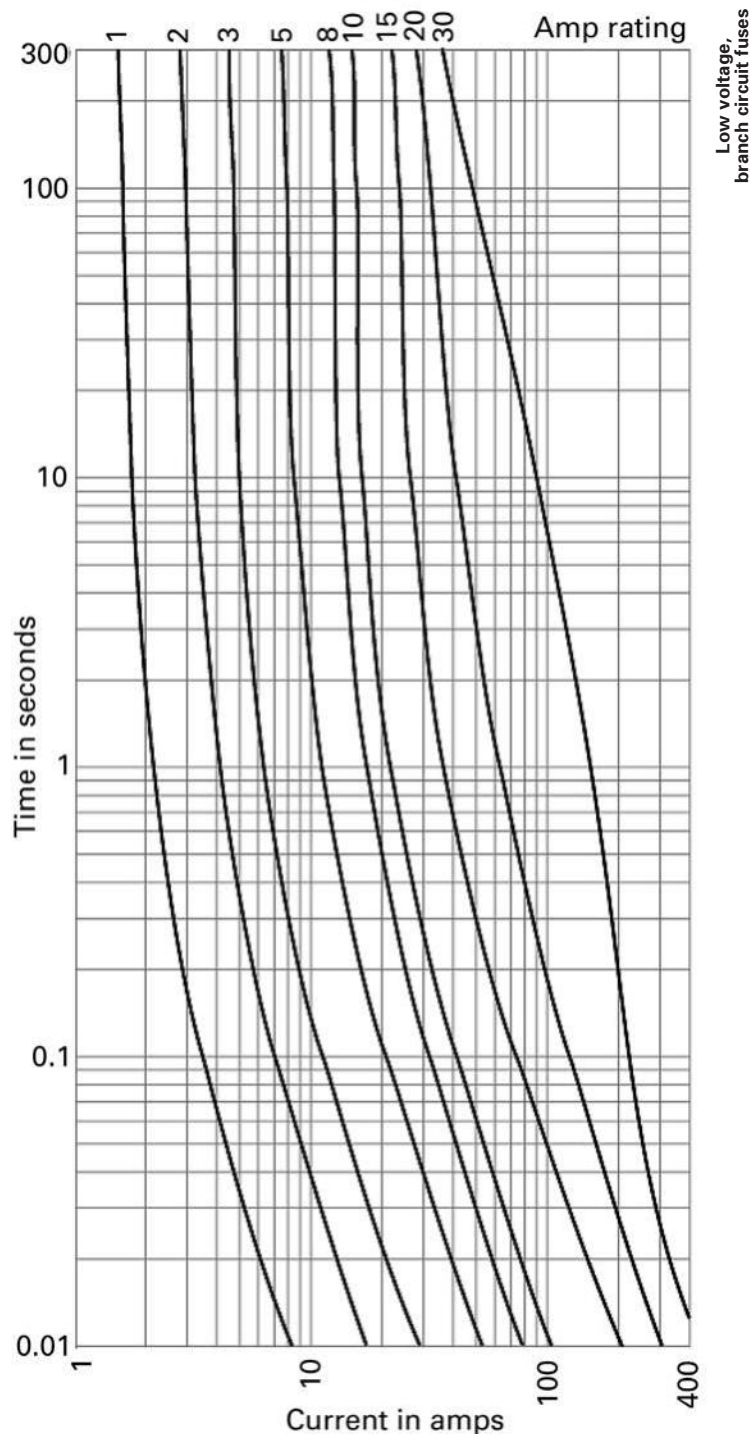
- Specialized circuits
- Industrial controls and panels
- Isolated, in-line fuse holders (street lighting)

Catalog no. (amps)

KTK-R-1/10	KTK-R-6/10	KTK-R-3-1/2	KTK-R-10
KTK-R-1/8	KTK-R-3/4	KTK-R-4	KTK-R-12
KTK-R-2/10	KTK-R-1	KTK-R-5	KTK-R-15
KTK-R-1/4	KTK-R-1-1/2	KTK-R-6	KTK-R-20
KTK-R-3/10	KTK-R-2	KTK-R-7	KTK-R-25
KTK-R-4/10	KTK-R-2-1/2	KTK-R-8	KTK-R-30
KTK-R-1/2	KTK-R-3	KTK-R-9	

Recommended holders and blocks for Class CC fuses, see page 1-2.

Time-current characteristics — average melt



TCF Class CF Low-Peak time-delay CUBEFuse™

Finger-safe fuse and fuse holder system; dual-element, time-delay fuse; 10 seconds minimum operating time at 500% rated amps. Available in indication and non-indication versions. For dimensions, see page 1-3.

Ratings

- Volts
 - 600 Vac (or less)
 - 300 Vdc (or less)
- Amps 1-100 A
- IR
 - 300 kA RMS Sym. (UL)
 - 200 kA RMS Sym. (CSA)
 - 100 kA DC



Agency information

- UL Listed, Guide JDDZ, File E4273, CSA Certified, Class 1422- 02, File 53787, RoHS compliant, CE

Features

- Smallest installed footprint of any Class CC, J or RK fuse provides substantial space savings and installation flexibility
- IEC 60529 and finger-safe rating provides enhanced workplace safety
- Separate overload and short-circuit elements provide time-delay for sizing of high inrush loads linked with Class J current limitation
- Selective coordination ratio of 2:1 (within Low-Peak fuse family) prevents electrical shutdowns from extending beyond the failed circuit

Typical applications

- Electrical panelboards
- Machinery disconnects
- Industrial controls and panels
- Required finger-safe systems

Catalog no. (amps)

Indicating versions

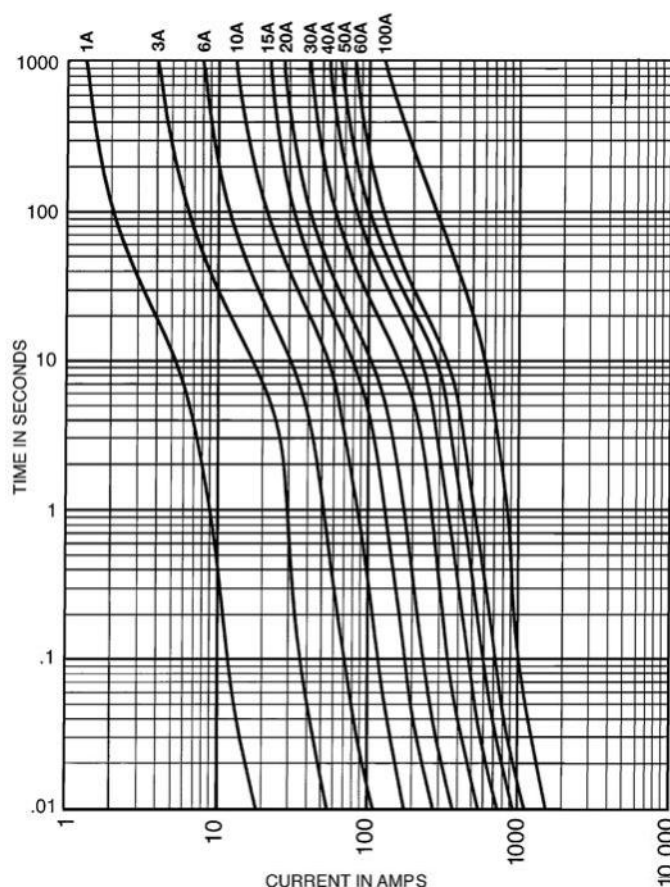
TCF6	TCF20	TCF40	TCF70
TCF10	TCF25	TCF45	TCF80
TCF15	TCF30	TCF50	TCF90
TCF17-1/2	TCF35	TCF60	TCF100

Non-indicating versions

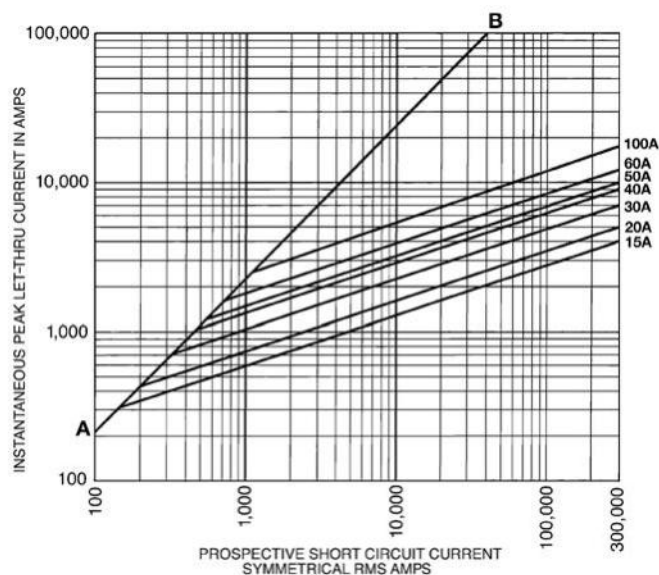
TCF1RN	TCF17-1/2RN	TCF40RN	TCF80RN
TCF3RN	TCF20RN	TCF45RN	TCF90RN
TCF6RN	TCF25RN	TCF50RN	TCF100RN
TCF10RN	TCF30RN	TCF60RN	
TCF15RN	TCF35RN	TCF70RN	

Recommended holders for Class CF fuses, see page 1-11.

Time-current characteristics — average melt



Current limitation curves



FCF Class CF fast-acting CUBEFuse

Finger-safe, non-indicating, fast-acting CUBEFuse for UPS and critical applications with a 4 minute maximum clearing time at 200%, rated current for 1 to 30 A fuse, 6 minute maximum clearing time at 200%, rated current for 35 to 60 A fuse. For dimensions, see page 1-3.

Ratings

- Volts 600 Vac/dc (or less)
- Amps 1-100 A
- IR
 - 300 kA RMS Sym. (UL up to 60 A)
 - 200 kA RMS Sym. (CSA all ratings and UL 70 to 100 A)
 - 50 kA DC



Agency information

- UL Listed, Guide JDDZ, File E4273, CSA Certified, Class 1422- 02, File 53787, RoHS compliant, CE

Features

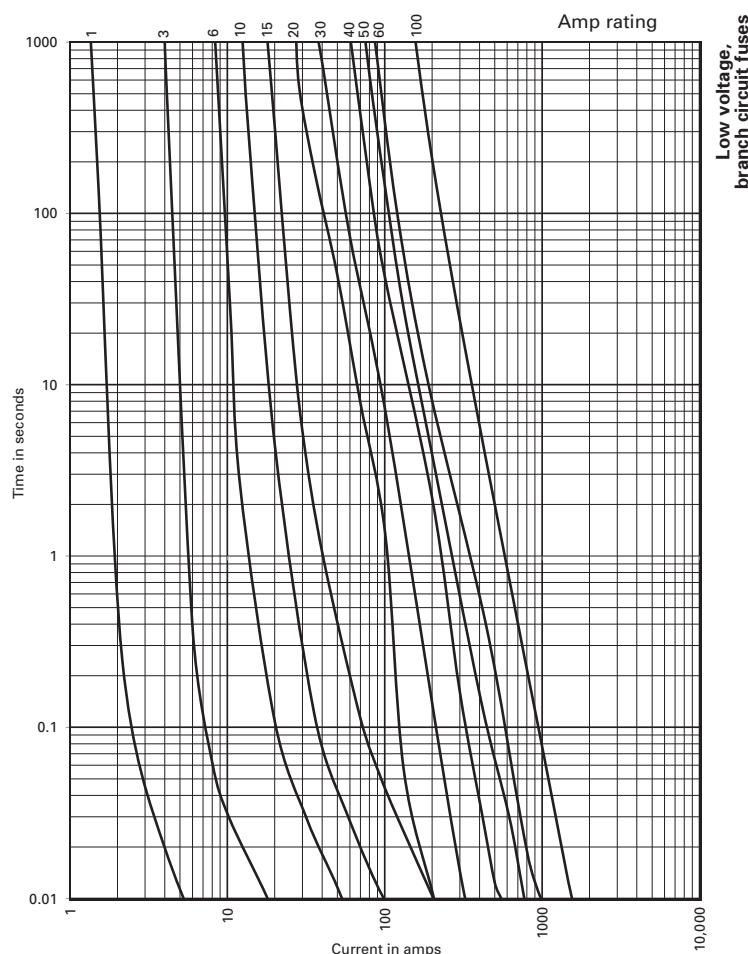
- The world's first finger-safe power fast-acting fuse system
- Smallest installed footprint of any class fuse including Class CC, J, and RK
- Class CF meets Class J fast-acting electrical performance requirements
- True fast-acting for faster response to damaging faults to help reduce destructive thermal and magnetic forces
- High interrupting rating to safely interrupt faults up to 300 kA
- No venting of arc or molten metal and gases during opening
- Low let-through currents under fault conditions

Catalog no. (amps)

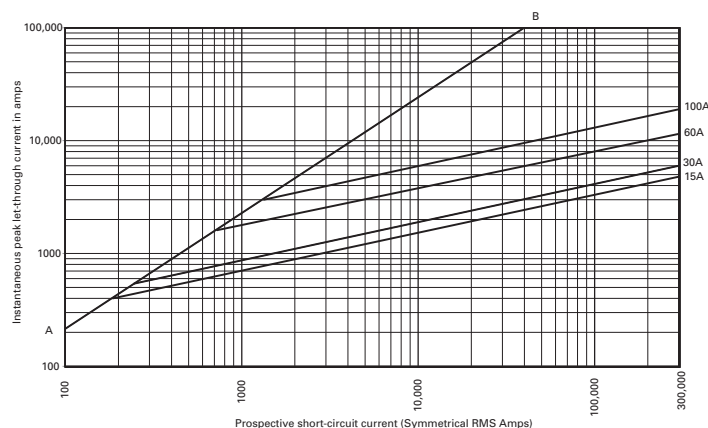
FCF1RN	FCF20RN	FCF45RN	FCF90RN
FCF3RN	FCF25RN	FCF50RN	FCF100RN
FCF6RN	FCF30RN	FCF60RN	
FCF10RN	FCF35RN	FCF70RN	
FCF15RN	FCF40RN	FCF80RN	

Recommended holders for Class CF fuses, see page 1-11.

Time-current characteristics — average melt



Current limitation curves



WCF fast-acting 690 V wind power CUBEFuse

Finger-safe, non-indicating, fast-acting CUBEFuse for wind power generation systems with a maximum clearing time at 200% rated current: 4 minutes for 1 to 30 amp fuses, 6 minutes for 35 to 60 amp fuses, 8 minutes for 70 to 100 amp fuses. For dimensions, see page 1-3.

Ratings

- Volts 690 Vac
- Amps 1-100 A
- IR
 - 50 kA AC (1-60 A)
 - 30 kA AC (70-100 A)



Agency information

- UL Recognized, Guide JFHR2, File E56412, cURus Component Certified C22.2, RoHS compliant, CE

Features

- Maximize uptime and reliability using fuses designed and listed to UL 248-1
- Minimize chances of equipment failure and personnel injury when using full range fuses having the industry's fastest response time to low-magnitude faults
- Maximize return on investment with fuses proven to withstand harsh temperatures
- Minimize design time, operating outage time and replacement cost with fuses qualified in excessively changing environmental conditions
- Simplify compatibility with readily available industry standard holders
- Temperature derating — Designed to maximize rated capacity in elevated environmental temperatures
- Overload protection — Proven to clear faults faster than the UL requirement
- Power loss — Minimal energy consumption leading to increased efficiency

Typical application

- Protecting wind system transformers, pitch and speed controls, and turbine HVAC and lighting

Catalog no. (amps)

WCF1RN	WCF15RN	WCF35RN	WCF60RN	WCF100RN
WCF3RN	WCF20RN	WCF40RN	WCF70RN	WCF100RN
WCF6RN	WCF25RN	WCF45RN	WCF80RN	
WCF10RN	WCF30RN	WCF50RN	WCF90RN	

Recommended holders for WCF fuses, see page 1-11.

Watts loss at rated current

Amps	Fuse catalog no.	Watts
15	WCF15RN	3.48
30	WCF30RN	5.45
60	WCF60RN	7.27
100	WCF100RN	11.5

Data sheet no. 9009 (fuses) and 9007 (holders)

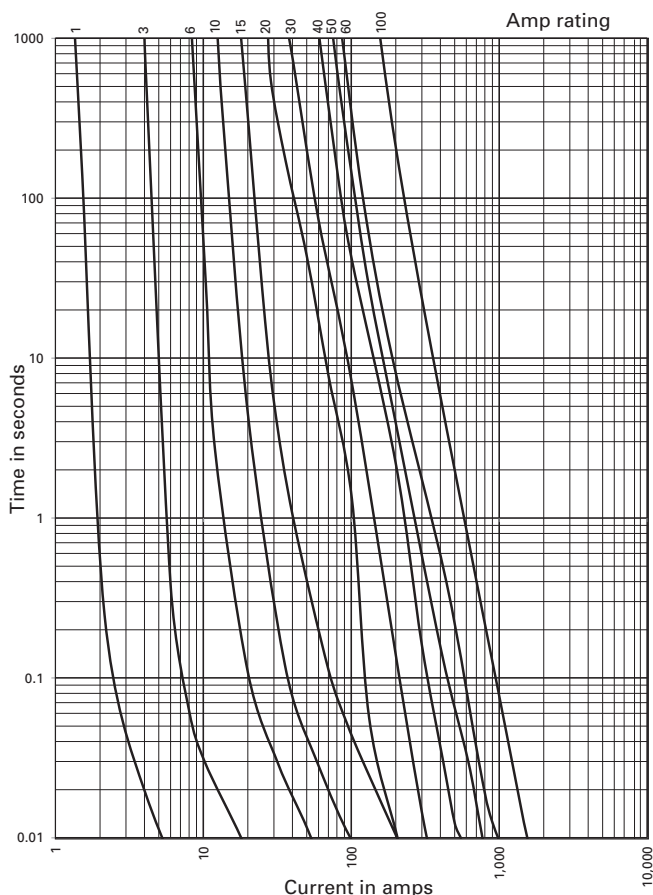
Operating and storage temperature range

-40°C to 90°C

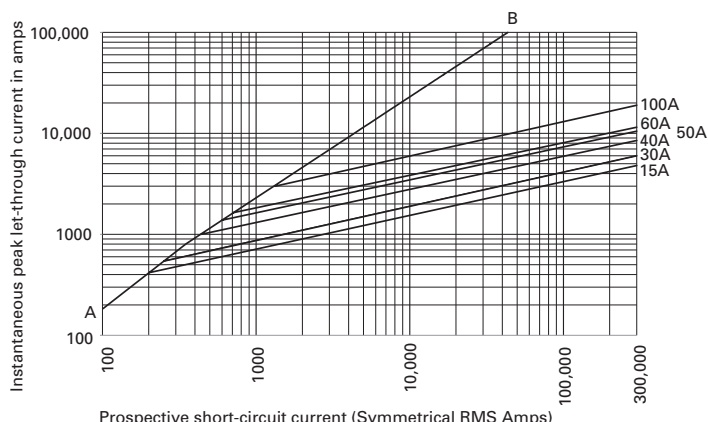
Mounting

The wind CUBEFuse must be mounted in the 690 V WCF holders that are rated for 690 volts. Not to be installed in the CCP2-CF or CCP2B disconnect switches. See page 1-11.

Time-current characteristic curves — average melt



Current limitation curves



CUBEFuse™ finger-safe fuse holders

Gangable, finger-safe one-pole holders available in ratings of 30, 60 and 100 amps. All holders, regardless of amp rating, can be ganged together using an interlocking dovetail to create the desired number of poles. Each holder can accept a CUBEFuse of equal or less amps. Wind CUBEFuse (WCF) must be mounted in 690 V rated versions. See catalog number table.

Ratings

- Volts
 - 600 V (UL, CSA TCFH_N)
 - 690 V (cURus TCFH_NW)
- Amps 30, 60, 100 A
- Withstand rating
 - 300 kA RMS Sym. (UL)
 - 200 kA RMS Sym. (CSA)
 - 100 kA DC (UL and CSA)
 - 50 kA AC (cURus, 1-60 A TCFH_NW)



Agency information

- UL Listed, Guide IZLT, File E14853 (600 V)
- UL Recognized, Guide IZLT2, File E14853 (690 V)
- CSA Certified, Class 6225-01, File 47235, cURus Component Certified
- CE
- RoHS compliant

Mounting

- 35 mm DIN-Rail
- Panel mount

Operating and storage temperature range

- 40°C to 80°C

Catalog no.	Volts	Amps	Accepts fuse amp range
TCFH30N	600	30	1-30
TCFH60N		60	1-60
TCFH100N		100	1-100
TCFH30NW	690	30	1-30
TCFH60NW		60	1-60
TCFH100NW		100	1-100

CUBEFuse™ holder fuse applications

Holder catalog no.	Volts	CUBEFuse type and amp range		
		TCF and TCF_RN	FCF_RN	WCF_RN
TCFH30N	600	1-30	1-30	—
TCFH60N		1-60	1-60	
TCFH100N		1-100	1-100	
TCFH30NW	690	—	—	1-30
TCFH60NW				1-60
TCFH100NW				1-100

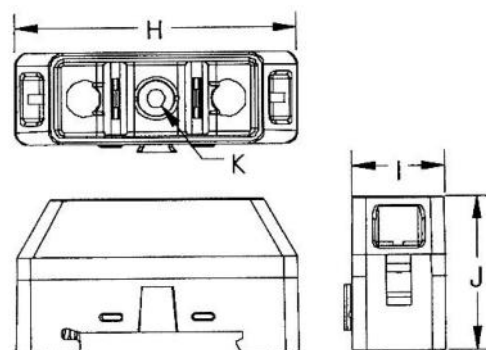
Terminal torque and conductor ratings

Ratings are for 75°C Cu AWG conductors. Table values are expressed in AWG range, followed by torque in N•m followed by lb-in in parentheses.

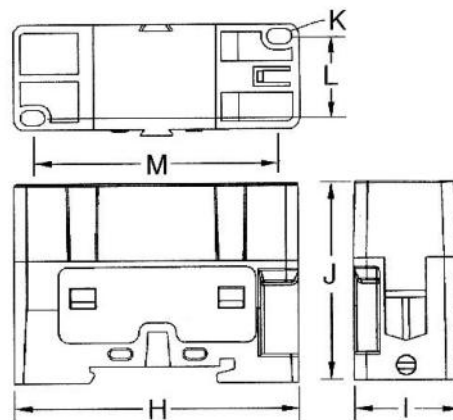
Terminal wire rating	Holder catalog no.		
	TCFH30N / TCFH30NW	TCFH60N / TCFH60NW	TCFH100N / TCFH100NW
Single	8-10 / 2.8 (25) 12-18 / 2.6 (20)	10-14 / 2.6 (20) 4-8 / 3.9 (35)	10-18 / 2.6 (20)** 1-8 / 4.5 (40)†
Dual	10-18 / 2.8 (25)*	10-18 / 2.6 (20) 6-8 / 3.9 (35)	6 / 5.1 (45)†

* 10-18 AWG stranded, 14-18 AWG solid

**Solid and stranded



30 and 60 amp holders



100 amp holder

† Stranded

Dimensions — in (mm)

Amps	Amp range	Wire* range - single (dual)	H	I	J	K	L	M	Max height with fuse
			(in)	(in)	(in)	(in)	(in)	(in)	
30	1-30	14-8 (14-10)	2.3 (58)	0.76 (19)	1.36 (34)	0.15 (4)	—	—	2.36 (60)
60	1-60	14-4 (10-6)	2.6 (66)	1.03 (26)	1.60 (41)	0.17 (4)	—	—	2.73 (69)
100	1-100	10-1 (6)	2.91 (74)	1.05 (27)	2.01 (51)	0.15 (4)	0.80 (20)	2.51 (64)	3.27 (83)

* 75°C Cu AWG.

SC Class G general purpose fuses

Fast-acting (1/2-6 A) and time-delay (7-60 A) Class G fuses. SC fuses are size rejecting measuring 13/32" in diameter by various lengths associated with their amp rating ranging from 1-5/16" to 2-1/4". This feature helps prevent overfusing. See the catalog numbers table for length by amp rating.

Ratings

- Volts
 - 600 Vac (1/2-20 A)
 - 480 Vac (25-60 A)
 - 170 Vdc (1/2-20 A)
 - 300 Vdc (25-60 A)
- Amps 1/2-60 A
- IR
 - 100 kA RMS Sym.
 - 10 kA DC



Agency information

- UL Listed Std 248-5, Class G, Guide JDDZ, File E4273, CSA Certified, Class 1422-01, File 53787, RoHS compliant, CE

Features

- Class G current limiting for component and branch circuit protection
- 100 kA interrupting rating provides cost-effective branch circuit fusing for systems with high short-circuit current levels
- Rejection feature with variations in length helps prevent overfusing

Typical applications

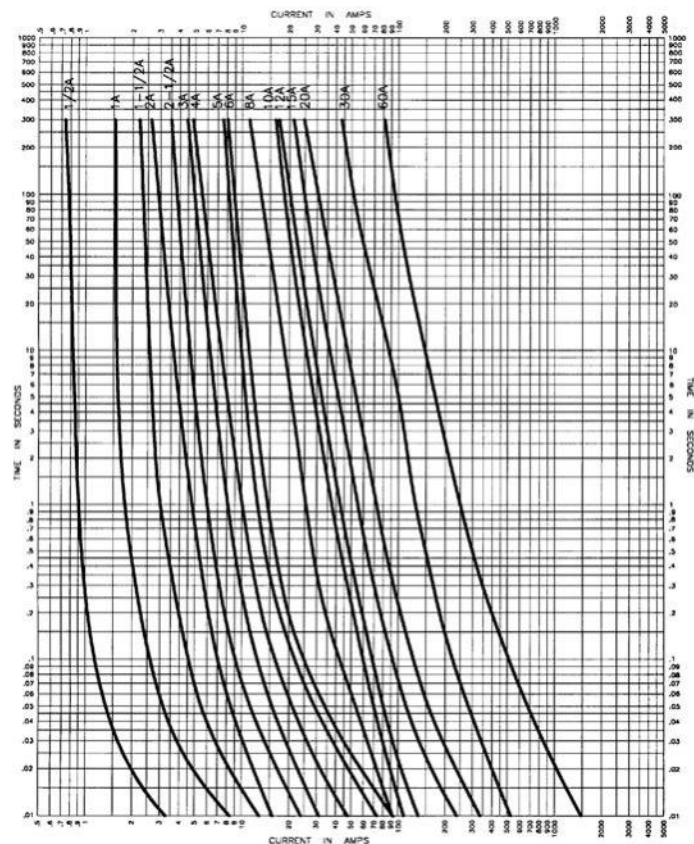
- Fusible branch circuit panelboards
- HVAC branch circuit protection

Catalog no. (amps) and length

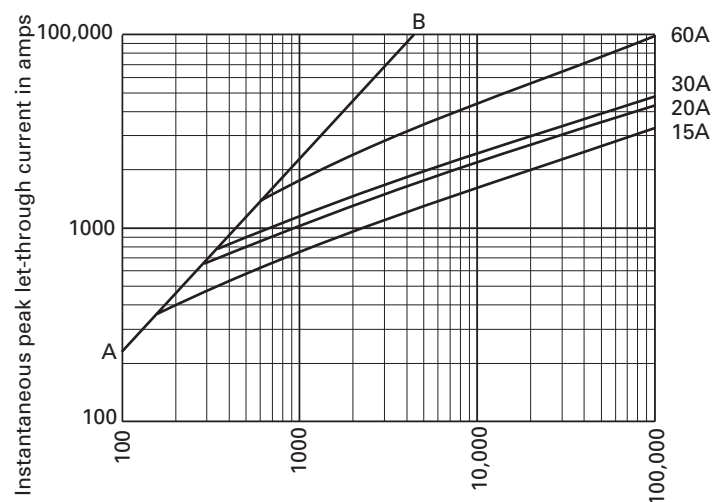
1-5/16"	1-13/32"	1-5/8"	2-1/4"
SC-1/2	SC-20	SC-25	SC-35
SC-1		SC-30	SC-40
SC-1-1/2			SC-45
SC-2			SC-50
SC-2-1/2			SC-60
SC-3			
SC-4			
SC-5			
SC-6			
SC-7			
SC-8			
SC-10			
SC-12			
SC-15			

Recommended holders and blocks for Class G fuses, see page 1-2.

Time-current characteristics — average melt



Current limitation curves



Prospective short-circuit current (Symmetrical RMS Amps)
A-B = Asymmetrical available peak (2.3 x Sym. RMS Amps)

LPJ_SP Class J Low-Peak dual-element, time-delay fuses

Dual-element, time-delay Class J fuse; 10 seconds (minimum) at 500% rated amps, available with optional indication on select ratings (see catalog numbers table). For dimensions, see page 1-3.

Ratings

- Volts
 - 600 Vac (or less)
 - 300 Vdc (or less)*
- Amps 1-600 A
- IR
 - 300 kA RMS Sym.
 - 100 kA DC

* Does not apply to indicating versions.

Agency information

- UL Listed, Guide JDDZ, File E4273, CSA Certified Class J per CSA 22.2 No 248.8, Class 1422-02, File 53787, RoHS compliant, CE

Features

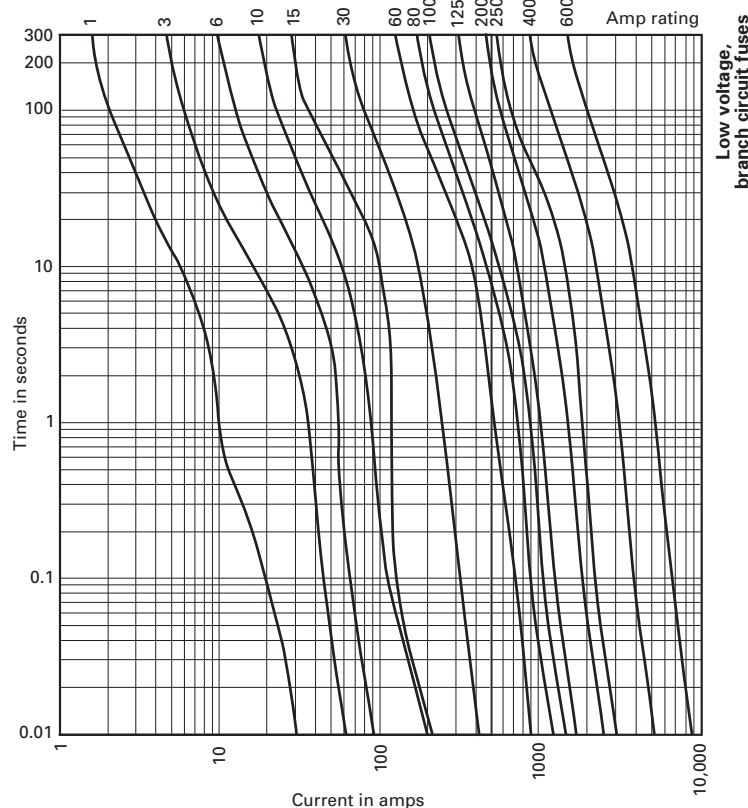
- Separate overload and short-circuit elements provide time delay for sizing of high inrush loads linked with Class J current limitation
- Selective coordination ratio of 2:1 (within Low-Peak fuse family) prevents electrical shutdowns from extending beyond the failed circuit
- Series combination ratings with branch circuit breakers allows broad range of coverage, independent of breaker manufacturer

Typical applications

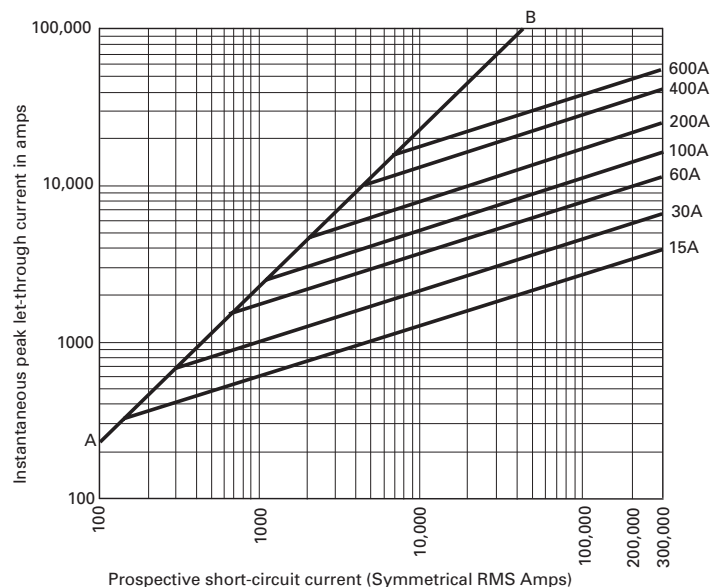
- Power panelboards
- Branch circuit breaker panelboard mains
- Machinery disconnects
- Industrial control



Time-current characteristics — average melt



Current limitation curves



Catalog no. (amps)

LPJ-1SP	LPJ-4-1/2SP	LPJ-25SP*	LPJ-125SP*
LPJ-1-1/4SP	LPJ-5SP	LPJ-30SP*	LPJ-150SP*
LPJ-1-6/10SP	LPJ-5-6/10SP	LPJ-35SP*	LPJ-175SP*
LPJ-1-8/10SP	LPJ-6SP*	LPJ-40SP*	LPJ-200SP*
LPJ-2SP	LPJ-7SP*	LPJ-45SP*	LPJ-225SP*
LPJ-2-1/4SP	LPJ-8SP*	LPJ-50SP*	LPJ-250SP*
LPJ-2-1/2SP	LPJ-9SP*	LPJ-60SP*	LPJ-300SP*
LPJ-2-8/10SP	LPJ-10SP*	LPJ-70SP*	LPJ-350SP*
LPJ-3SP	LPJ-12SP*	LPJ-80SP*	LPJ-400SP*
LPJ-3-2/10SP	LPJ-15SP*	LPJ-90SP*	LPJ-450SP*
LPJ-3-1/2SP	LPJ-17-1/2SP*	LPJ-100SP*	LPJ-500SP*
LPJ-4SP	LPJ-20SP*	LPJ-110SP*	LPJ-600SP*

*Available with optional permanent replace fuse indication To order, place "I" at end of catalog number Example: LPJ-6SPI.

Available with silver plated terminals Add SP/ in front of catalog number.

Recommended holders and blocks for Class J fuses, see page 1-2.

JKS Class J Limitron™ fast-acting fuses

Fast-acting, Class J current-limiting fuse. For superior electrical protection, Eaton recommends upgrading JKS fuse applications to Bussmann series Low-Peak LPJ fuses. See page 1-13. For dimensions, see page 1-3.

Ratings

- Volts 600 Vac (or less)
- Amps 1-600 A
- IR 200 kA RMS Sym.

Agency information

- 600 Vac, UL Listed, Std. 248-8, Class J, Guide JDDZ, File E4273, CSA Certified, Class 1422-02, File 53787, CE



Features

- Current limitation for non-inductive circuits provides Class J current-limiting response to maximum ground fault and short-circuit conditions
- 200 kA interrupting rating provides protection at all circuit locations
- Economical circuit protection for high-fault current circuits

Typical applications

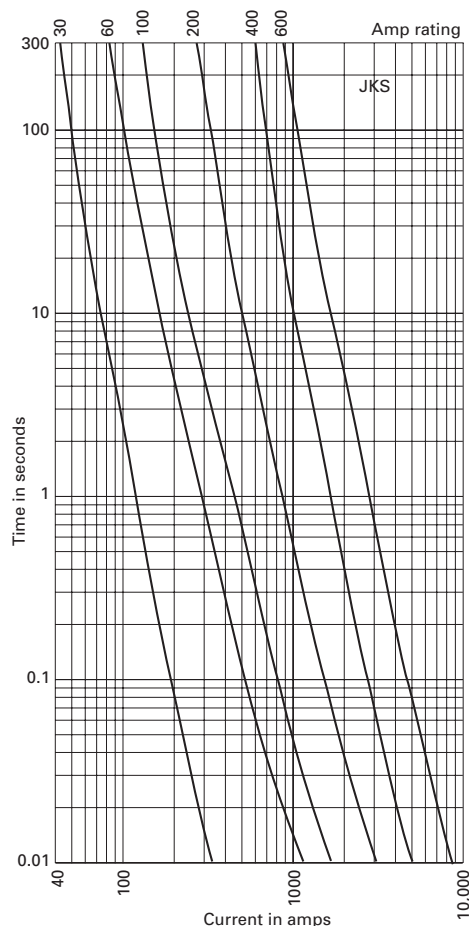
- Power panelboards
- Machinery disconnects

Catalog no. (amps)

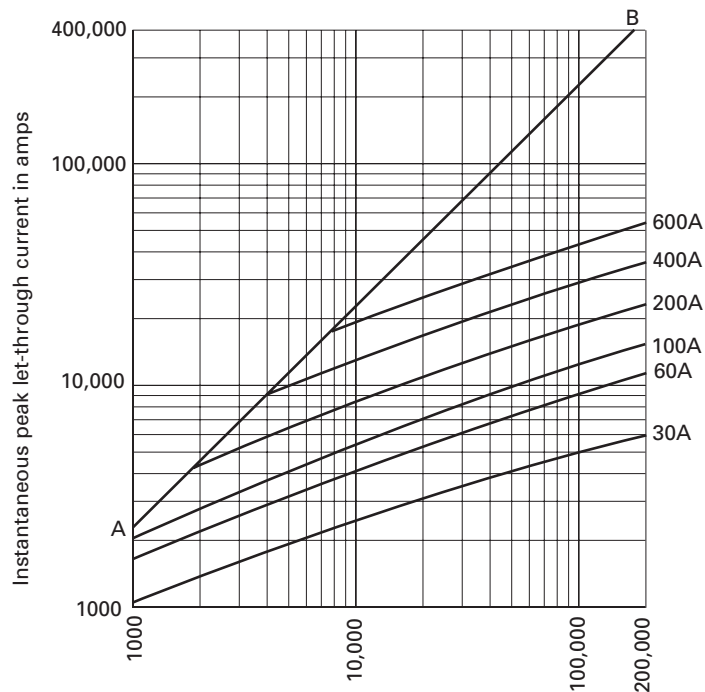
JKS-1	JKS-15	JKS-70	JKS-225
JKS-2	JKS-20	JKS-80	JKS-250
JKS-3	JKS-25	JKS-90	JKS-300
JKS-4	JKS-30	JKS-100	JKS-350
JKS-5	JKS-35	JKS-110	JKS-400
JKS-6	JKS-40	JKS-125	JKS-450
JKS-8	JKS-45	JKS-150	JKS-500
JKS-10	JKS-50	JKS-175	JKS-600
JKS-12	JKS-60	JKS-200	

Recommended holders and blocks for JKS Class J fuses, see page 1-2.

Time-current characteristics — average melt



Current limitation curves



Prospective short-circuit current (Symmetrical RMS Amps)
A-B = Asymmetrical available peak (2.3 x Sym. RMS Amps)

NON and NOS Class K5/H general purpose one-time fuses

General purpose, Class K5 and H non-current-limiting fuse 250 V NON and 600 V NOS fuses. For superior electrical protection, Eaton recommends upgrading NON (250 Vac) and NOS (600 Vac) fuse applications to Bussmann series Low-Peak LPN-RK (250 Vac) and LPS-RK (600 Vac) fuses, see page 1-18. For dimensions, see page 1-3.

Ratings

- Volts
 - NON
 - 250 Vac
 - 125 Vdc (0-100 A)
 - NOS
 - 600 Vac
- Amps 1/8-600 A
- IR
 - 50 kA RMS Sym. (NON and NOS 0-60 A)
 - 10 kA RMS Sym. (NON and NOS 65-600 A)
 - 50 kA @ 125 Vdc (NON 0-60 A)
 - 10 kA @ 125 Vdc (NON 65-100 A)



Agency information

- UL Listed
 - 250 V Class K5 (0-60 A), Std 248-9, Class H (65-600 A), Std 248-6, (125 Vac, NON 0-100 A)
 - 600 V Class K5 (0-60 A), Std 248-9, Class H (70-600 A), Std 248-6, Guide JDDZ, File E4273
- CSA Certified
 - 250 V (0-12, 65-600 A)†
 - 600 V (0-600 A), Class 1421-01, File 53787

• CE

† For CSA Certified 15-60 A ratings, see PON in Section 5, page 2.

Features

- Basic overcurrent protection.

Typical applications

- Light duty circuit locations

Catalog no. (amps)

250 V NON

NON-1/8	NON-5	NON-40	NON-175
NON-1/2	NON-6	NON-45	NON-200
NON-3/4	NON-6-1/4	NON-50	NON-225
NON-8/10	NON-7	NON-60	NON-250
NON-1	NON-8	NON-65	NON-300
NON-1-1/4	NON-9	NON-70	NON-350
NON-1-1/2	NON-10	NON-75	NON-400
NON-1-6/10	NON-12	NON-80	NON-450
NON-2	NON-15	NON-90	NON-500
NON-2-1/2	NON-20	NON-100	NON-600
NON-3	NON-25	NON-110	
NON-3-2/10	NON-30	NON-125	
NON-4	NON-35	NON-150	

600 V NOS

NOS-1	NOS-12	NOS-70	NOS-200
NOS-2	NOS-15	NOS-75	NOS-225
NOS-3	NOS-20	NOS-80	NOS-250
NOS-4	NOS-25	NOS-90	NOS-300
NOS-5	NOS-30	NOS-100	NOS-350
NOS-6	NOS-35	NOS-110	NOS-400
NOS-7	NOS-40	NOS-125	NOS-450
NOS-8	NOS-45	NOS-150	NOS-500
NOS-9	NOS-50	NOS-175	NOS-600
NOS-10	NOS-60		

Recommended fuse reducers

250 V			600 V		
Fuse amps	Clip amp size	Catalog no. (pair)	Fuse amps	Clip amp size	Catalog no. (pair)
30	60	NO.263	30	60	NO.663
30	100	NO.213	30	100	NO.216
60	100	NO.216	60	100	NO.616
60	200	NO.226	60	200	NO.626
100	200	NO.2621	100	200	NO.2621
100	400	NO.2641	100	400	NO.2641
200	400	NO.2642	200	400	NO.2642
100	600	NO.2661	100	600	NO.2661
200	600	NO.2662	200	600	NO.2662
400	600	NO.2664	400	600	NO.2664

Recommended blocks for Class K5 and H fuses, see page 1-2.

Low voltage,
branch circuit fuses

KRP-C_SP Class L Low-Peak time-delay fuses

Time-delay Class L fuses — 4 seconds (minimum) at 500% rated amps. Use KRP-CL for current ratings under 601 A. For dimensions, see page 1-4.

Ratings

- Volts
 - 600 Vac (or less)
 - 300 Vdc (601-2000 A, 3000 A)
- Amps 601-6000 A
- IR
 - 300 kA RMS Sym.
 - 100 kA DC



Agency information

- UL Listed 248-10, Guide JFHR, File E56412, CSA Certified, Class 1422-02, File 53787, Class L per CSA C22.2, No 248.10, RoHS compliant, CE

Features

- Time-delay of 4 seconds at 5 times rating allows closer sizing on large motor loads combined with Class L current limitation
- Selective coordination ratio of 2:1 (within Low-Peak fuse family) prevents electrical shutdowns from extending beyond the failed circuit
- Interrupting rating of 300 kA RMS symmetrical provides adequate ratings without obsolescence for all electrical systems, big or small
- Quality construction, using high-grade materials, provides lower watts loss and operating temperatures with superior arc quenching during current-limiting action

Typical applications

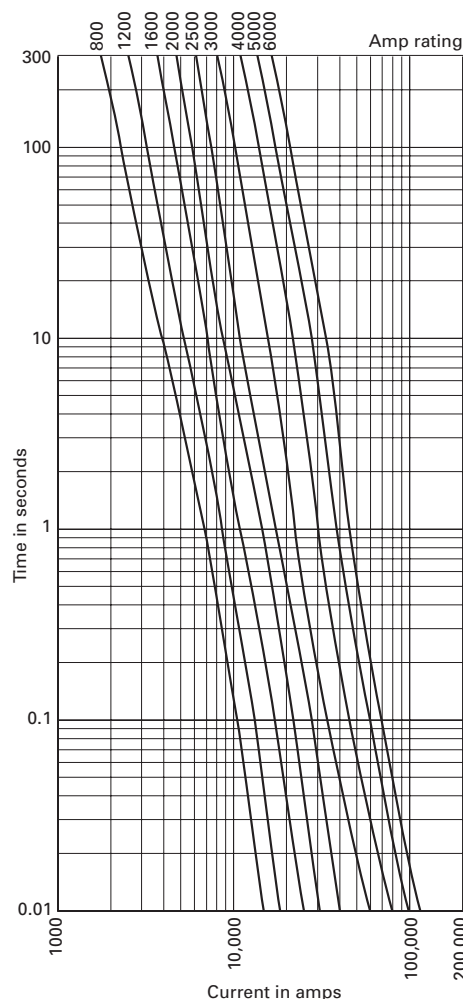
- Large distribution switchboards
- Power panelboards
- Large machinery disconnects

Catalog no. (amps)

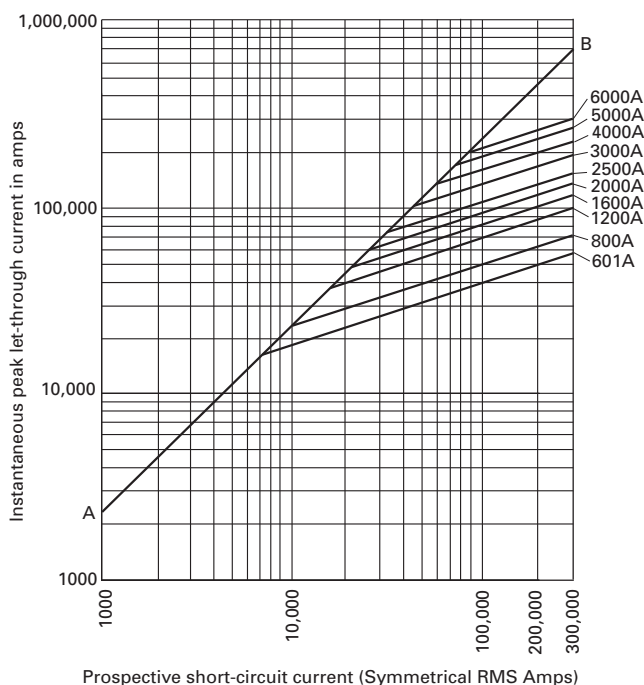
KRP-C-601SP	KRP-C-1000SP	KRP-C-1800SP	KRP-C-3500SP
KRP-C-650SP	KRP-C-1100SP	KRP-C-1900SP	KRP-C-4000SP
KRP-C-700SP	KRP-C-1200SP	KRP-C-2000SP	KRP-C-4500SP
KRP-C-750SP	KRP-C-1350SP	KRP-C-2001SP	KRP-C-5000SP
KRP-C-800SP	KRP-C-1400SP	KRP-C-2400SP	KRP-C-6000SP
KRP-C-801SP	KRP-C-1500SP	KRP-C-2500SP	
KRP-C-900SP	KRP-C-1600SP	KRP-C-3000SP	

Recommended blocks for Class L fuses, see page 1-2.

Time-current characteristics — average melt



Current limitation curves



KRP-CL current-limiting, time-delay fuses

Current-limiting, time-delay fuse with Class L dimensions for the 601-800 A case size. For dimensions, see page 1-4.

Ratings

- Volts 600 Vac (or less)
- Amps 225-600 A
- IR 200 kA RMS Sym.

Agency information

- RoHS compliant

Features

- Time-delay of 4 seconds at 5 times rating allows closer sizing inductive loads coupled with an equivalent Class L current limitation
- 601 to 800 A Class L case size permits applying circuit protection from 225 to 600 A for downsize fusing of 800 amp Class L fused switches

Typical applications

- Large distribution switchboards
- Power panelboards
- Machinery disconnects



KTU Class L Limitron fast-acting fuses

Fast-acting, Class L fuses. For superior electrical protection, Eaton recommends upgrading KTU fuse applications to Bussmann series Low-Peak KRP-C fuses, see page 1-16. For dimensions, see page 1-4.

Ratings

- Volts 600 Vac (or less)
- Amps 601-6000 A
- IR 200 kA RMS Sym.

Agency information

- UL Listed, Std 248-10, Class L, Guide JDDZ, File E4273, CSA Certified, Class 1422-02, File 53787, RoHS compliant, CE

Features

- 200 kA interrupting rating provides protection at all circuit locations
- Economical protection for high-fault current circuits
- Quality construction using high-grade materials provides lower watts loss and operating temperatures with superior arc quenching during current-limiting action

Typical applications

- Large distribution switchboards
- Power panelboards



Low voltage,
branch circuit fuses

Catalog no. (amps)

KRP-CL-225	KRP-CL-300	KRP-CL-400	KRP-CL-500
KRP-CL-250	KRP-CL-350	KRP-CL-450	KRP-CL-600

Recommended blocks for Class L fuses, see page 1-2.

Catalog no. (amps)

KTU-601	KTU-850	KTU-1500	KTU-2500
KTU-650	KTU-900	KTU-1600	KTU-3000
KTU-700	KTU-1000	KTU-1800	KTU-3500
KTU-750	KTU-1100	KTU-2000	KTU-4000
KTU-800	KTU-1200	KTU-2001	KTU-5000
KTU-801	KTU-1400	KTU-2400	KTU-6000

Recommended blocks for Class L fuses, see page 1-2.

KLU Class Limitron time-delay fuses

Time-delay, Class L fuses - 5 seconds (minimum) at 500% rated amps. For superior electrical protection, Eaton recommends upgrading KLU fuse applications to Bussmann series Low-Peak KRP-C fuses, see page 1-16. Use KRP-CL for current ratings under 601 A. For dimensions, see page 1-4.

Ratings

- Volts 600 Vac (or less)
- Amps 601-4000 A
- IR 200 kA RMS Sym.

Agency information

- UL Listed, Std 248-10, Class L, Guide JDDZ, File E4273, CSA Certified, CSA Class 1422-02, File 53787, RoHS compliant, CE

Features

- 200 kA interrupting rating provides protection at all circuit locations
- Economical protection for high-fault current circuits

Typical applications

- Large distribution switchboards
- Power panelboards
- Large machinery disconnects



LPN-RK_SP (250 V) and LPS-RK_SP (600 V) Class RK1 Low-Peak dual-element, time-delay fuses

Current-limiting, dual-element, time-delay Class RK1 fuses; 10 seconds (minimum) at 500% rated amps (8 seconds for 0-30 A sizes). Available with optional indication on select ratings (see catalog numbers table). For dimensions, see page 1-3.

Ratings

- Volts
 - LPN-RK
 - 250 Vac (or less)
 - 125 Vdc* (0-60 A)
 - 250 Vdc* (70-600 A)
 - LPS-RK
 - 600 Vac (or less)
 - 300 Vdc*
- Amps 1/10-600 A
- IR
 - 300 kA RMS Sym.
 - 100 kA DC

* Does not apply to indicating versions.

Agency information

- UL Listed, Guide JDDZ, File E4273, CSA Certified, Class RK1 per CSA C22.2, No 248.12, Class 1422-02, File 53787, CE

Features

- Separate overload and short-circuit elements provide time delay for close sizing of high inrush loads linked with RK1 current-limitation and selective coordination ratio of 2:1 (within Low-Peak fuse family) helps prevent widespread blackouts
- Inventory consolidation of Class RK1, RK5 and H fuses for reduced SKU investment and minimizing potential for misapplying fuse
- 300 kA RMS symmetrical interrupting rating provides adequate ratings without obsolescence for all electrical systems, big or small
- Insulated end caps reduces exposure to live parts and extends air gap to distance between blades of adjacent mounted fuses or to housing

Typical applications

- Large distribution switchboards
- Power panelboards
- Motor control centers
- Machinery disconnect switches



Catalog no. (amps)

KLU-601	KLU-1000	KLU-1800	KLU-4000
KLU-650	KLU-1200	KLU-2000	
KLU-700	KLU-1500	KLU-2500	
KLU-800	KLU-1600	KLU-3000	

Recommended blocks for Class L fuses, see page 1-2.

Catalog no. (amps)
250 V LPN-RK*

LPN-RK-1/10SP	LPN-RK-2-1/4SP	LPN-RK-12SP	LPN-RK-110SP**
LPN-RK-15/100SP	LPN-RK-2-1/2SP	LPN-RK-15SP	LPN-RK-125SP**
LPN-RK-2/10SP	LPN-RK-2-8/10SP	LPN-RK-17-1/2SP	LPN-RK-150SP**
LPN-RK-3/10SP	LPN-RK-3SP	LPN-RK-20SP	LPN-RK-175SP**
LPN-RK-4/10SP	LPN-RK-3-2/10SP	LPN-RK-25SP	LPN-RK-200SP**
LPN-RK-1/2SP	LPN-RK-3-1/2SP	LPN-RK-30SP	LPN-RK-225SP**
LPN-RK-6/10SP	LPN-RK-4SP	LPN-RK-35SP**	LPN-RK-250SP**
LPN-RK-8/10SP	LPN-RK-4-1/2SP	LPN-RK-40SP**	LPN-RK-300SP**
LPN-RK-1SP	LPN-RK-5SP	LPN-RK-45SP**	LPN-RK-350SP**
LPN-RK-1-1/8SP	LPN-RK-5-6/10SP	LPN-RK-50SP**	LPN-RK-400SP**
LPN-RK-1-1/4SP	LPN-RK-6SP	LPN-RK-60SP**	LPN-RK-450SP**
LPN-RK-1-4/10SP	LPN-RK-6-1/4SP	LPN-RK-70SP**	LPN-RK-500SP**
LPN-RK-1-6/10SP	LPN-RK-8SP	LPN-RK-80SP**	LPN-RK-600SP**
LPN-RK-1-8/10SP	LPN-RK-9SP	LPN-RK-90SP**	
LPN-RK-2SP	LPN-RK-10SP	LPN-RK-100SP**	

600 V LPS-RK

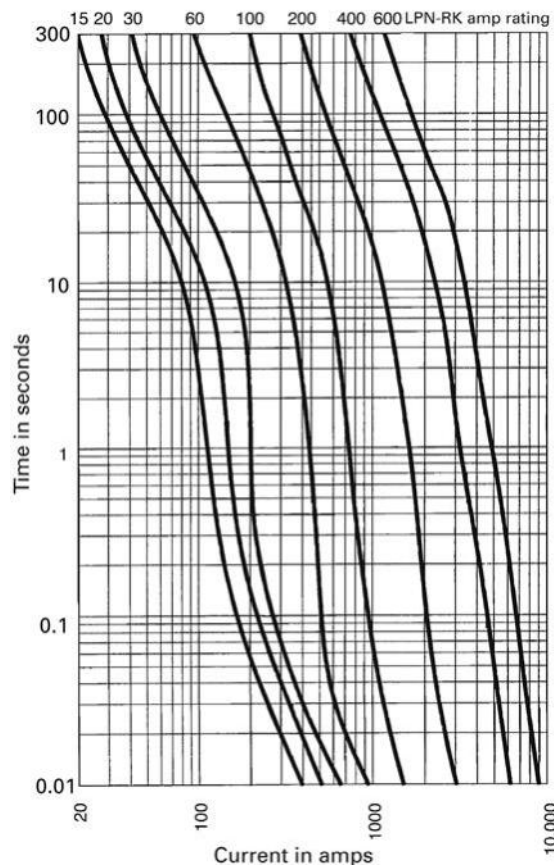
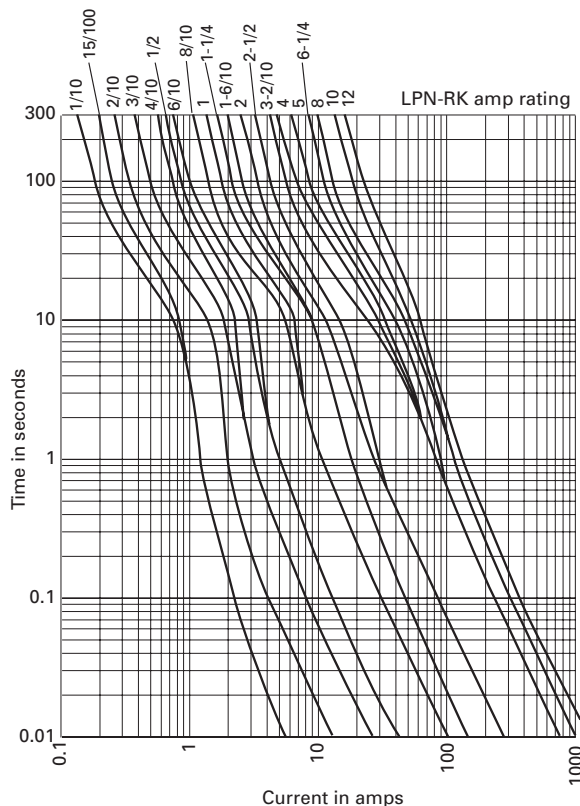
LPS-RK-1/10SP	LPS-RK-2-1/4SP	LPS-RK-10SP**	LPS-RK-100SP**
LPS-RK-2/10SP	LPS-RK-2-1/2SP	LPS-RK-12SP**	LPS-RK-110SP**
LPS-RK-3/10SP	LPS-RK-2-8/10SP	LPS-RK-15SP**	LPS-RK-125SP**
LPS-RK-4/10SP	LPS-RK-3SP	LPS-RK-17-1/2SP**	LPS-RK-150SP**
LPS-RK-1/2SP	LPS-RK-3-2/10SP	LPS-RK-20SP**	LPS-RK-175SP**
LPS-RK-6/10SP	LPS-RK-3-1/2SP	LPS-RK-25SP**	LPS-RK-200SP**
LPS-RK-8/10SP	LPS-RK-4SP	LPS-RK-30SP**	LPS-RK-225SP**
LPS-RK-1SP	LPS-RK-4-1/2SP	LPS-RK-35SP**	LPS-RK-250SP**
LPS-RK-1-1/8SP	LPS-RK-5SP	LPS-RK-40SP**	LPS-RK-300SP**
LPS-RK-1-1/4SP	LPS-RK-5-6/10SP	LPS-RK-45SP**	LPS-RK-350SP**
LPS-RK-1-4/10SP	LPS-RK-6SP**	LPS-RK-50SP**	LPS-RK-400SP**
LPS-RK-1-1/2SP	LPS-RK-6-1/4SP**	LPS-RK-60SP**	LPS-RK-450SP**
LPS-RK-1-6/10SP	LPS-RK-7SP**	LPS-RK-70SP**	LPS-RK-500SP**
LPS-RK-1-8/10SP	LPS-RK-8SP**	LPS-RK-80SP**	LPS-RK-600SP**
LPS-RK-2SP	LPS-RK-9SP**	LPS-RK-90SP**	

* 0-60 A fuses available with Nickel plate option. Example: LPS-RK30SPNP).

70-600 A fuses available with tin-plate option. Example: LPS-RK-100SP-Tp.

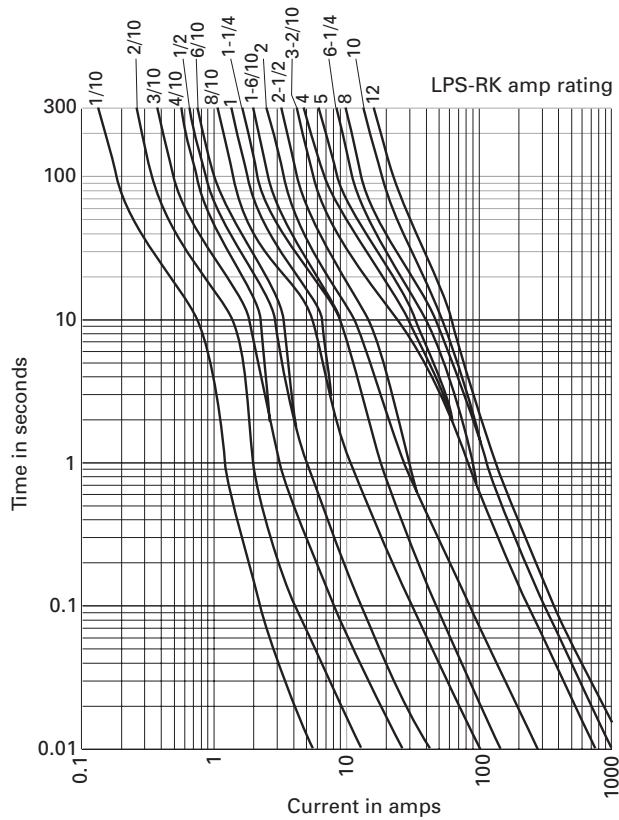
** Available with optional indication; to order, place "I" at end of catalog number
Example: LPN-RK-35SPI or LPS-RK-15SPI.

Recommended blocks for Class RK1 fuses, see page 1-2.

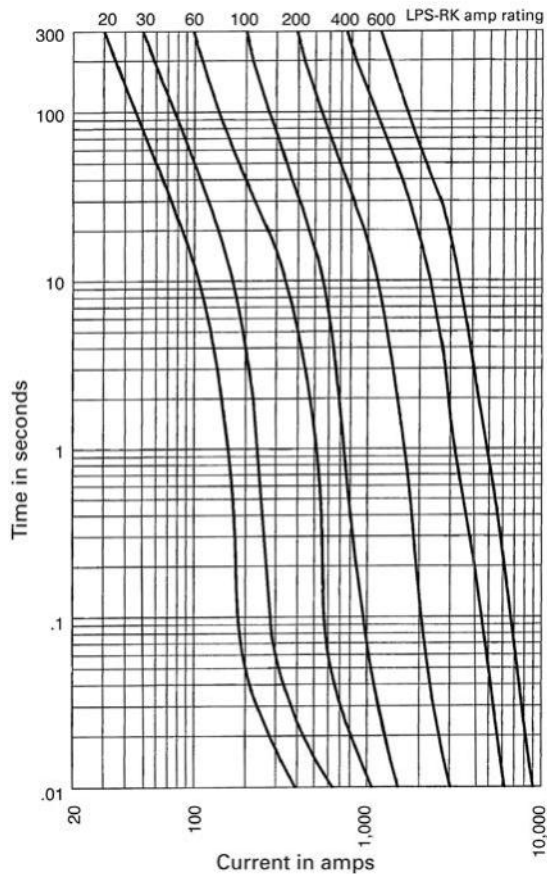
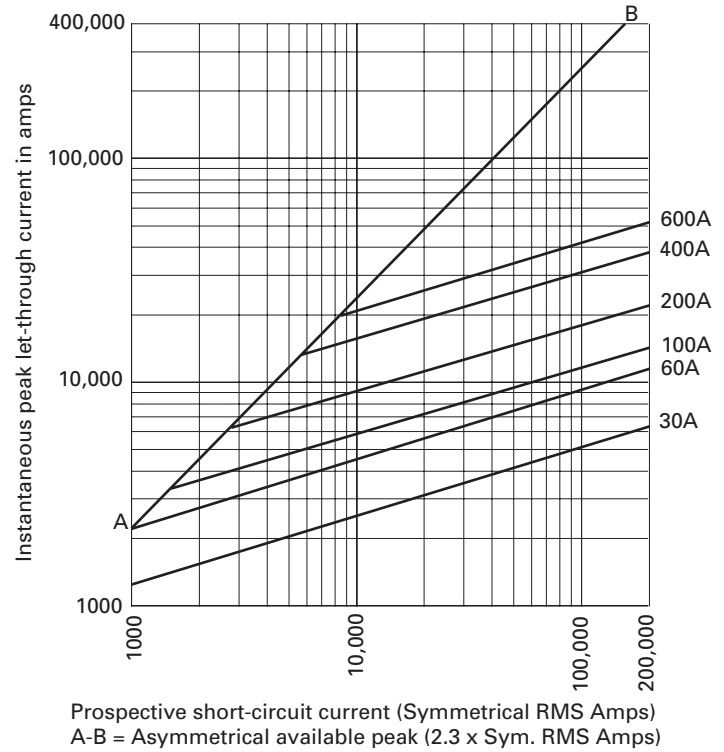
LPN Time-current characteristics — average melt


Data sheet no. LPN-RK 1003 (up to 60 A), 1007 (70-600 A)
LPS-RK 1001 (up to 60 A), 1002 (70-600 A)

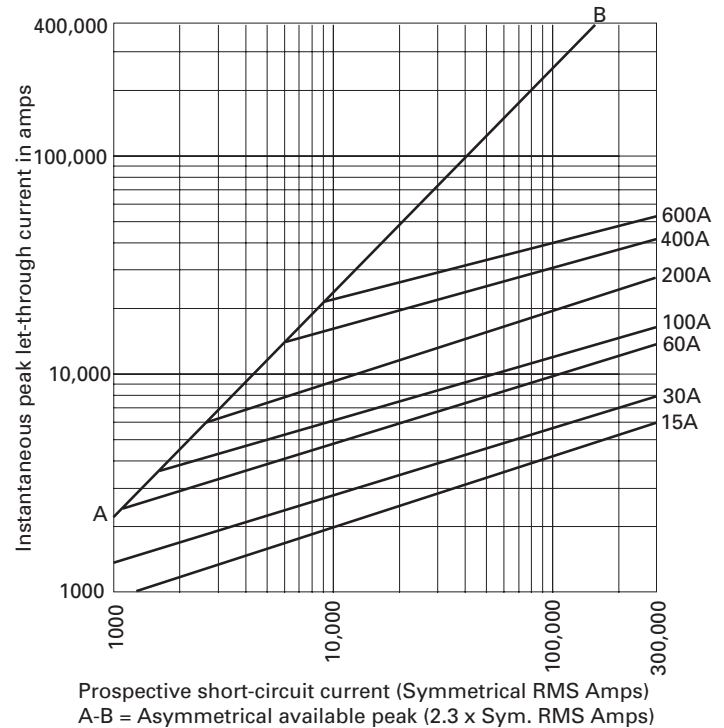
LPS Time-current characteristics — average melt



LPN Current limitation curves



LPS Current limitation curves



Data sheet no. LPN-RK 1003 (up to 60 A), 1007 (70-600 A)
LPS-RK 1001 (up to 60 A), 1002 (70-600 A)

KTN-R (250 V) and KTS-R (600 V) Class RK1 Limitron fast-acting fuses

Fast-acting, current-limiting Class RK1 fuses. For superior electrical protection, Eaton recommends upgrading KTN-R fuse applications to Bussmann series Low-Peak LPN-RK 250 V or LPS-RK 600 V fuses, see page 1-18. For dimensions, see page 1-3.

Ratings

- Volts
 - KTN-R
 - 250 Vac (or less)
 - 250 Vdc (70-350 A)
 - KTS-R 600 Vac (or less)
- Amps 1-600 A
- IR
 - 200 kA RMS Sym.
 - 100 kA Vdc (KTN-R)



Agency information

- KTN-R
 - UL Listed, Std 248-12, Class RK1, Guide JDDZ, File E4273
 - CSA Certified, Class 1422-02, File 53787
- KTS-R
 - UL Listed, Std 248-12, Class RK1, Guide JDDZ, File E54273
 - CSA Certified, C22.2 No 248.12, Class 1422-02, File 53787
- CE

Features

- Current limitation for non-inductive circuits provides Class RK1 current-limiting response to maximum ground fault and short-circuit conditions
- 200 kA interrupting rating provides high ratings at all circuit locations
- Economical protection for high-fault current circuits

Typical applications

- Panelboards

Catalog no. (amps)

250 V KTN-R

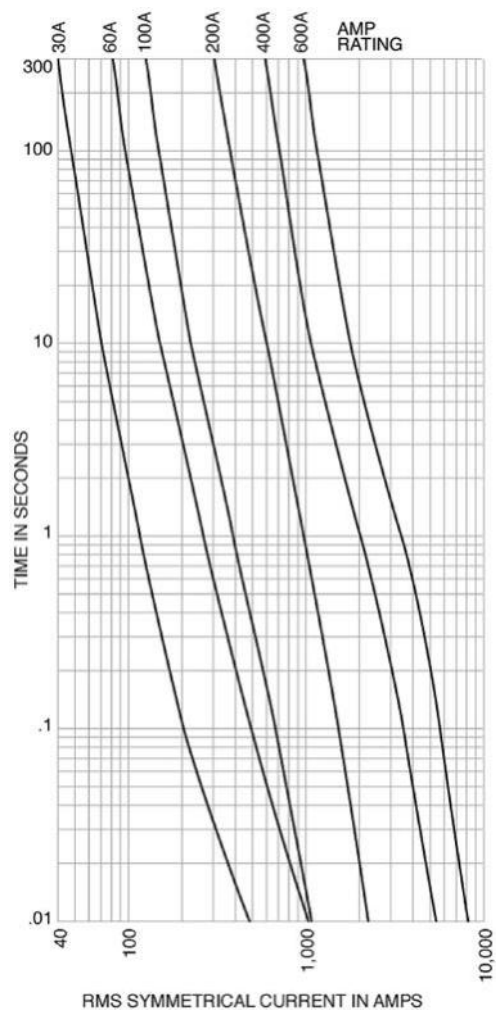
KTN-R-1	KTN-R-15	KTN-R-70	KTN-R-200
KTN-R-2	KTN-R-20	KTN-R-75	KTN-R-225
KTN-R-3	KTN-R-25	KTN-R-80	KTN-R-250
KTN-R-4	KTN-R-30	KTN-R-90	KTN-R-300
KTN-R-5	KTN-R-35	KTN-R-100	KTN-R-350
KTN-R-6	KTN-R-40	KTN-R-110	KTN-R-400
KTN-R-8	KTN-R-45	KTN-R-125	KTN-R-450
KTN-R-10	KTN-R-50	KTN-R-150	KTN-R-500
KTN-R-12	KTN-R-60	KTN-R-175	KTN-R-600

600 V KTS-R

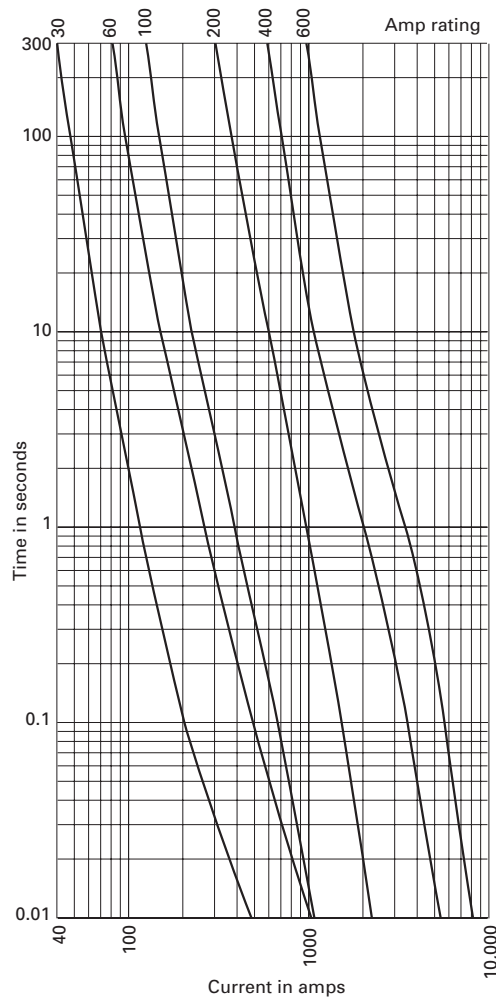
KTS-R-1	KTS-R-12	KTS-R-70	KTS-R-225
KTS-R-2	KTS-R-15	KTS-R-75	KTS-R-250
KTS-R-3	KTS-R-30	KTS-R-80	KTS-R-300
KTS-R-4	KTS-R-35	KTS-R-90	KTS-R-350
KTS-R-5	KTS-R-40	KTS-R-125	KTS-R-400
KTS-R-6	KTS-R-45	KTS-R-150	KTS-R-450
KTS-R-8	KTS-R-50	KTS-R-175	
KTS-R-10	KTS-R-60	KTS-R-200	
KTS-R-20	KTS-R-100	KTS-R-500	
KTS-R-25	KTS-R-110	KTS-R-600	

Recommended blocks for Class RK1 fuses, see page 1-2.

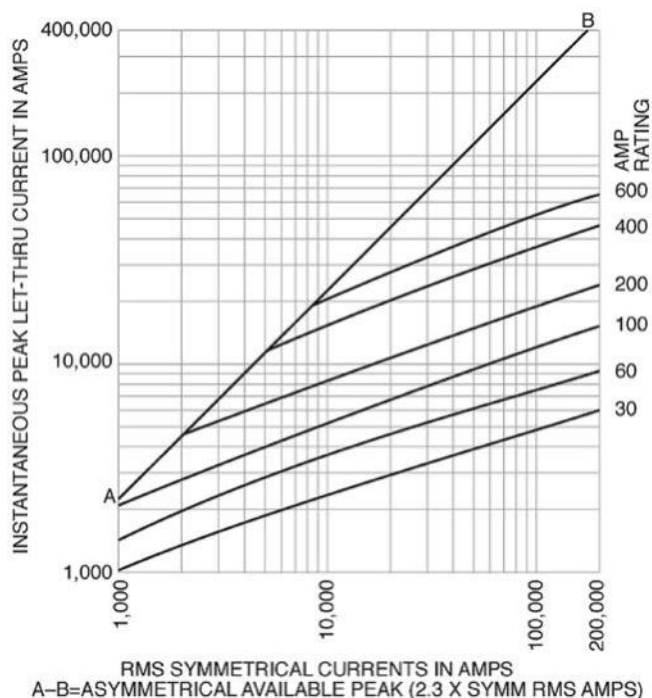
KTN-R Time-current characteristics — average melt



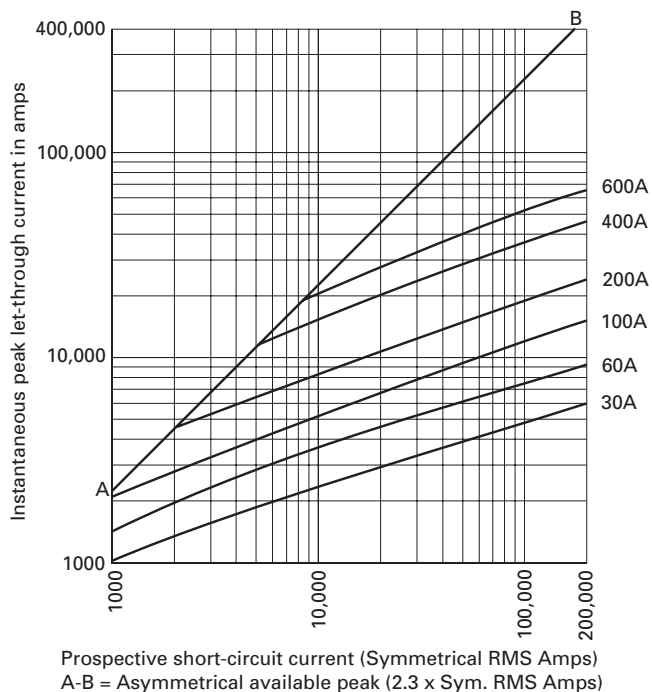
KTS-R Time-current characteristics — average melt



KTN-R Current limitation curves



KTS-R Current limitation curves



FRN-R (250 V) and FRS-R (600 V) Class RK5 Fusetron™ energy efficient, dual-element, time-delay fuses

Dual-element, time-delay Class RK5 fuses. FRN-R — 10 seconds (minimum) at 500% rated amps (8 seconds for 0-30 A sizes). FRS-R — 10 seconds (minimum) at 500% rated amps. FRN-R and FRS-R available with optional indication on select ratings (see catalog numbers table). For superior electrical protection, Eaton recommends upgrading to Bussmann series Low-Peak LPN-RK (250 V) or LPS-RK (600 V) fuses, see page 1-18. For dimensions, see page 1-3.

Ratings

- Volts
 - FRN-R
 - 250 Vac (or less)
 - 125 Vdc (1/10-60 A, 110-200 A)
 - 250 Vdc (225-600 A)
 - FRS-R
 - 600 Vac (or less)
 - 300 Vdc 1/10-30 A, 65-600 A
 - 250 Vdc* 35-60 A
- Amps 1/10-600 A
- IR
 - 200 kA RMS Sym.
 - 20 kA DC

* Does not apply to indicating versions.

Agency information

- FRN-R
 - UL Listed, Std 248-12, Class RK5, Guide JDDZ, File E4273
 - CSA Certified, Class 1422-01, File 53787
- FRS-R
 - UL Listed, Std 248-12, Class RK5, Guide JDDZ, File E4273
 - CSA Certified, Class 1422-02, File 53787
- CE

Features

- Separate overload and short-circuit elements provide time-delay for sizing as close as 125% of motor FLA
- 2:1 selective coordination amp ratio (within the Fusetron RK5 fuse family) helps prevent overcurrent events from opening upstream Fusetron fuses
- Insulated end caps for 225-600 A (FRN-R) and 65-600 A (FRS-R) fuses reduces exposure to live parts and extends air gap to distance between blades of adjacent mounted fuses or to housing

Typical applications

- Power panelboards
- Motor control centers
- Combination starters
- Machinery disconnects



Catalog no. (amps)

250 V FRN-R

FRN-R-1/10	FRN-R-2	FRN-R-10*	FRN-R-100
FRN-R-1/8	FRN-R-2-1/4	FRN-R-12*	FRN-R-110
FRN-R-15/100	FRN-R-2-1/2	FRN-R-15*	FRN-R-125
FRN-R-2/10	FRN-R-2-8/10	FRN-R-17-1/2*	FRN-R-150
FRN-R-1/4	FRN-R-3	FRN-R-20*	FRN-R-175
FRN-R-3/10	FRN-R-3-2/10	FRN-R-25*	FRN-R-200
FRN-R-4/10	FRN-R-3-1/2	FRN-R-30*	FRN-R-225
FRN-R-1/2	FRN-R-4	FRN-R-35*	FRN-R-250
FRN-R-6/10	FRN-R-4-1/2	FRN-R-40*	FRN-R-300
FRN-R-8/10	FRN-R-5	FRN-R-45*	FRN-R-350
FRN-R-1	FRN-R-5-6/10	FRN-R-50*	FRN-R-400
FRN-R-1-1/8	FRN-R-6	FRN-R-60*	FRN-R-450
FRN-R-1-1/4	FRN-R-6-1/4	FRN-R-70	FRN-R-500
FRN-R-1-4/10	FRN-R-7	FRN-R-75	FRN-R-600
FRN-R-1-1/2	FRN-R-7-1/2	FRN-R-80	
FRN-R-1-6/10	FRN-R-8*	FRN-R-85	
FRN-R-1-8/10	FRN-R-9*	FRN-R-90	

600 V FRS-R

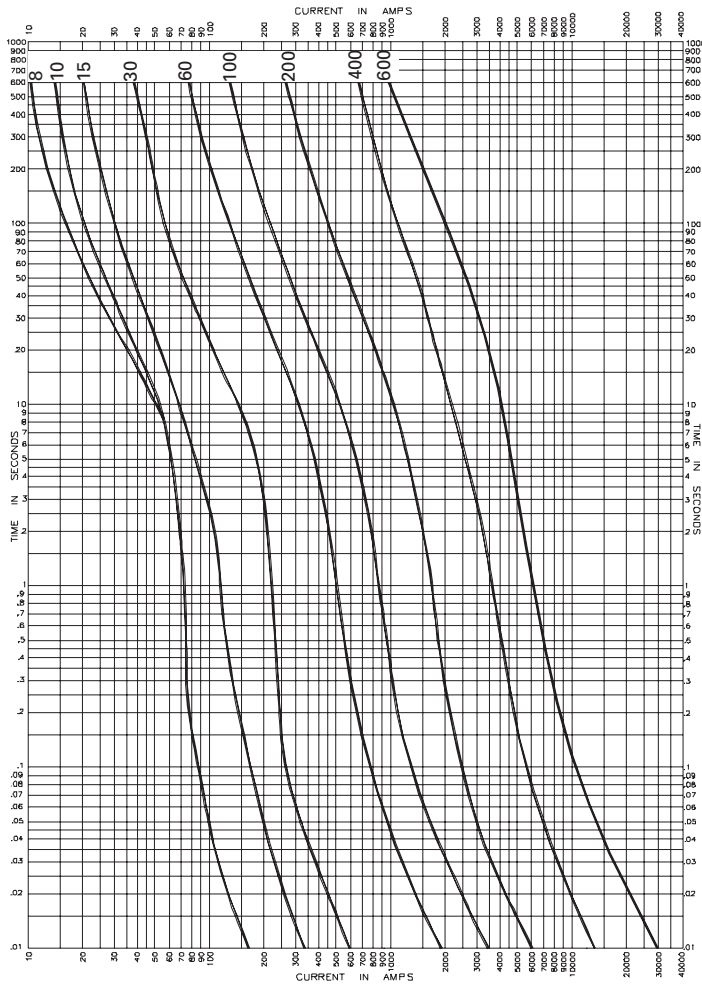
FRS-R-1/10	FRS-R-2	FRS-R-10*	FRS-R-100
FRS-R-1/8	FRS-R-2-1/4	FRS-R-12*	FRS-R-110
FRS-R-15/100	FRS-R-2-1/2	FRS-R-15*	FRS-R-125
FRS-R-2/10	FRS-R-2-8/10	FRS-R-17-1/2*	FRS-R-150
FRS-R-1/4	FRS-R-3	FRS-R-20*	FRS-R-175
FRS-R-3/10	FRS-R-3-2/10	FRS-R-25*	FRS-R-200
FRS-R-4/10	FRS-R-3-1/2	FRS-R-30*	FRS-R-225
FRS-R-1/2	FRS-R-4	FRS-R-35*	FRS-R-250
FRS-R-6/10	FRS-R-4-1/2	FRS-R-40*	FRS-R-300
FRS-R-8/10	FRS-R-5	FRS-R-45*	FRS-R-350
FRS-R-1	FRS-R-5-6/10	FRS-R-50*	FRS-R-400
FRS-R-1-1/8	FRS-R-6*	FRS-R-60*	FRS-R-450
FRS-R-1-1/4	FRS-R-6-1/4*	FRS-R-65	FRS-R-500
FRS-R-1-4/10	FRS-R-7*	FRS-R-70	FRS-R-600
FRS-R-1-1/2	FRS-R-7-1/2*	FRS-R-75	
FRS-R-1-6/10	FRS-R-8*	FRS-R-80	
FRS-R-1-8/10	FRS-R-9*	FRS-R-90	

* Available with indication To order, place "ID" at the end of the catalog number. Example: FRN-R-30ID or FRS-R-7ID.

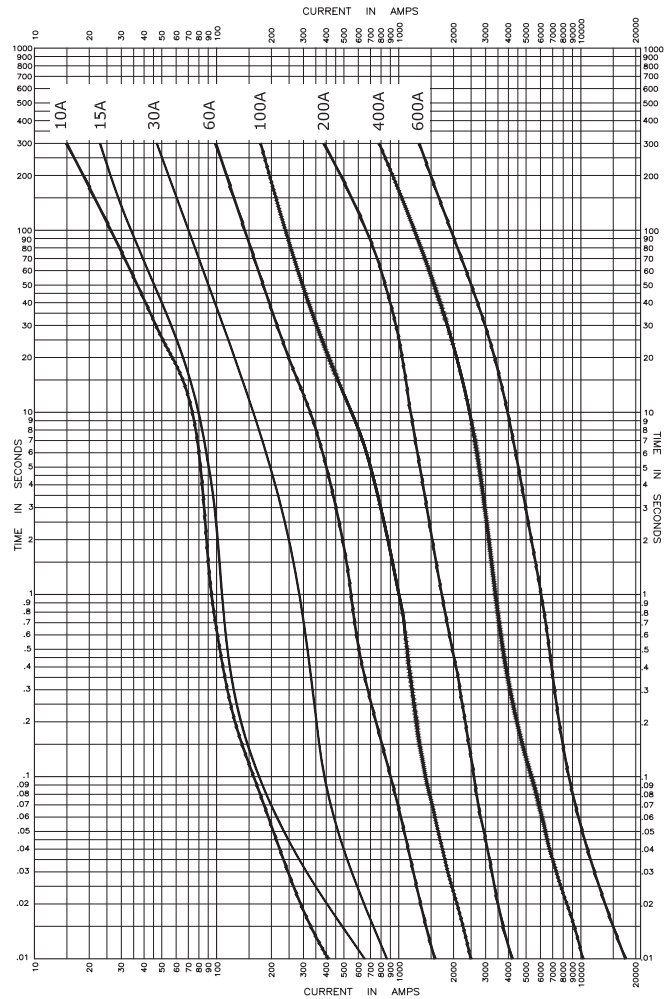
Recommended blocks for Class RK5 fuses, see page 1-2.

Data sheet no. **FRN-R; 1019 (up to 60 A), 1020 (70-600 A)**
FRS-R 1017 (up to 60 A), 1018 (70-600 A)

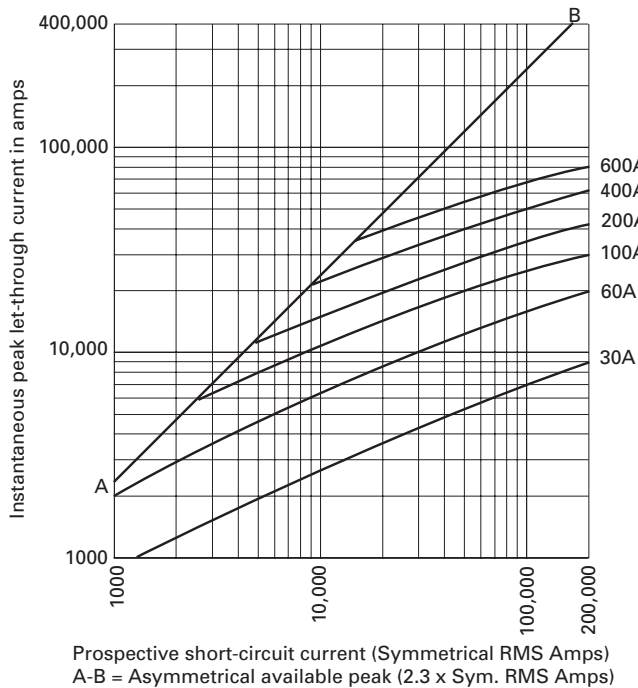
FRN-R Time-current characteristics — average melt



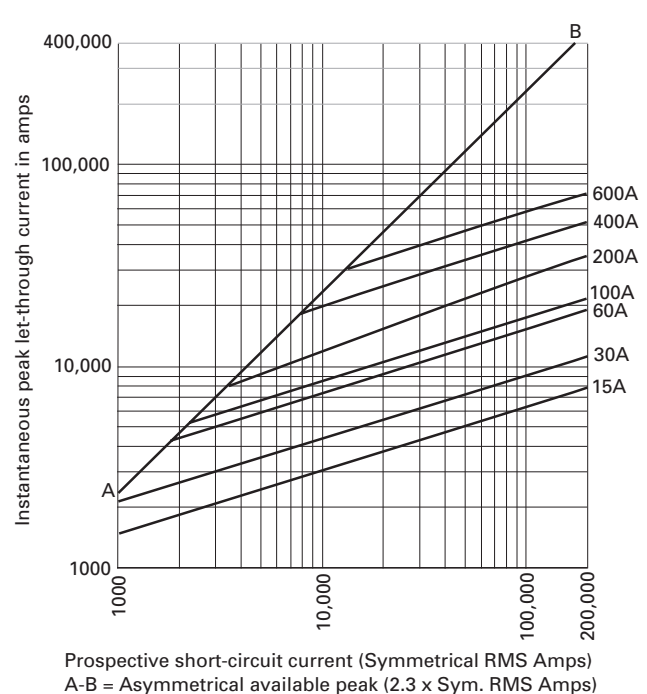
FRS-R Time-current characteristics — average melt



FRN-R Current limitation curves



FRS-R Current limitation curves



JJN (300 V) and JJS (600 V) Class T Limitron fast-acting fuses

Very fast-acting, current-limiting 300 V (JJN) and 600 V (JJS) Class T fuse. For dimensions, see page 1-3.

Ratings

- Volts
 - JJN
 - 300 Vac (or less)
 - 160 Vdc (15-600 A)
 - 170 Vdc (601-1200 A)
 - JJS 600 Vac (or less)
- Amps
 - JJN 1-1200 A
 - JJS 1-800 A
- IR
 - 200 kA RMS Sym.
 - 20 kA DC @ 160 Vdc (JJN)
 - 100 kA DC @ 170 Vdc (JJN)



Agency information

- UL Listed, Std 248-15, Class T, Guide JDDZ, File E4273, CSA Certified, Class 1422-02, File 53787, RoHS compliant, CE

Features

- Series combination ratings with branch circuit breakers allows broad range of coverage, independent of breaker manufacturer
- Current limitation for non-inductive circuits provides Class T current-limiting response to maximum ground fault and short-circuit conditions
- 200 kA interrupting rating provides protection for virtually all circuit locations
- Small footprint allows more efficient use of panel space

Current-limiting effects

300 V JJN

Prosp.	S.C.C. Let-through current (apparent RMS Sym. vs. fuse rating)									
—	15 A	30 A	60 A	100 A	200 A	400 A	600 A	800 A	1200 A	A
500	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
5000	1000	1000	1000	1000	1000	2000	3000	5000	5000	5000
10,000	1000	1000	1000	1000	2000	2000	4000	6000	7000	9000
15,000	1000	1000	1000	1000	2000	3000	4000	6000	9000	10,000
20,000	1000	1000	1000	1000	2000	3000	5000	7000	10,000	11,000
25,000	1000	1000	1000	2000	2000	3000	5000	7000	10,000	12,000
30,000	1000	1000	1000	2000	2000	3000	5000	8000	11,000	13,000
35,000	1000	1000	1000	2000	3000	4000	6000	8000	11,000	13,000
40,000	1000	1000	1000	2000	3000	4000	6000	9000	11,000	13,000
50,000	1000	1000	1000	2000	3000	4000	7000	9000	12,000	15,000
60,000	1000	1000	1000	2000	3000	4000	7000	10,000	13,000	16,000
70,000	1000	1000	1000	2000	3000	5000	7000	10,000	14,000	17,000
80,000	1000	1000	2000	2000	3000	5000	8000	11,000	15,000	17,000
90,000	1000	1000	2000	2000	3000	6000	8000	11,000	15,000	18,000
100,000	1000	1000	2000	2000	4000	6000	8000	12,000	16,000	19,000
150,000	1000	1000	2000	3000	4000	6000	9000	13,000	17,000	22,000
200,000	2000	2000	3000	4000	7000	9000	15,000	19,000	23,000	

Typical applications

- Large apartment complexes
- Multi-family meter stacks
- VFD line protection

Catalog no. (amps)

300 V JJN

JJN-1	JJN-35	JJN-110	JJN-400
JJN-2	JJN-40	JJN-125	JJN-450
JJN-3	JJN-45	JJN-150	JJN-500
JJN-6	JJN-50	JJN-175	JJN-600
JJN-10	JJN-60	JJN-200	JJN-700
JJN-15	JJN-70	JJN-225	JJN-800
JJN-20	JJN-80	JJN-250	JJN-1000
JJN-25	JJN-90	JJN-300	JJN-1200
JJN-30	JJN-100	JJN-350	

600 V JJS

JJS-1	JJS-30	JJS-90	JJS-250
JJS-2	JJS-35	JJS-100	JJS-300
JJS-3	JJS-40	JJS-110	JJS-350
JJS-6	JJS-45	JJS-125	JJS-400
JJS-10	JJS-50	JJS-150	JJS-450
JJS-15	JJS-60	JJS-175	JJS-500
JJS-20	JJS-70	JJS-200	JJS-600
JJS-25	JJS-80	JJS-225	JJS-800

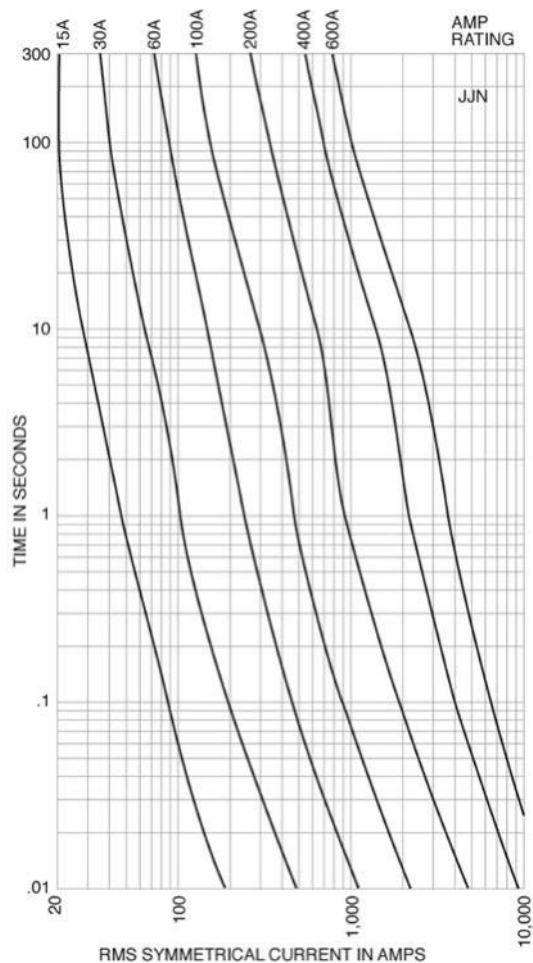
Recommended blocks for Class T fuses, see page 1-2.

600 V JJS

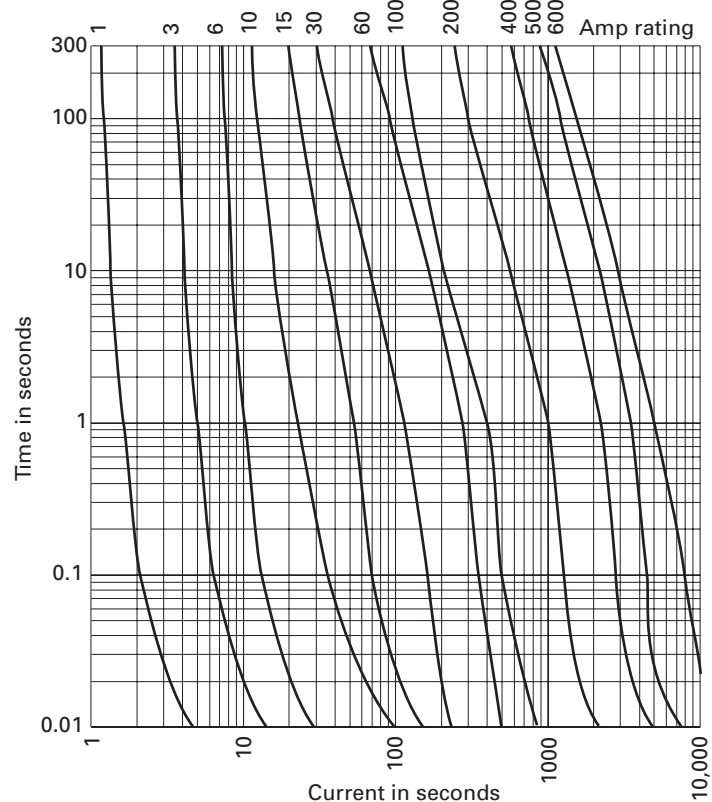
Prosp.	S.C.C. Let-through current (apparent RMS Sym. vs. fuse rating)									
—	15A	30A	60A	100A	200A	400A	600A	800A		
500	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
5000	1000	1000	1000	1000	2000	3000	4000	5000	5000	5000
10,000	1000	1000	1000	1000	2000	3000	6000	8000	9000	9000
15,000	1000	1000	1000	2000	3000	4000	7000	10,000	11,000	11,000
20,000	1000	1000	1000	2000	3000	4000	7000	10,000	12,000	12,000
25,000	1000	1000	1000	2000	3000	5000	7000	11,000	13,000	13,000
30,000	1000	1000	1000	2000	3000	5000	8000	12,000	14,000	14,000
35,000	1000	1000	1000	2000	3000	5000	9000	13,000	15,000	15,000
40,000	1000	1000	2000	2000	4000	5000	9000	13,000	15,000	15,000
50,000	1000	1000	2000	2000	4000	6000	10000	14,000	17,000	17,000
60,000	1000	1000	2000	3000	4000	6000	10000	16,000	18,000	18,000
70,000	1000	1000	2000	3000	4000	7000	11000	17,000	19,000	19,000
80,000	1000	1000	2000	3000	4000	7000	11000	17,000	20,000	20,000
90,000	1000	1000	2000	3000	4000	7000	12000	18,000	21,000	21,000
100,000	2000	2000	3000	5000	7000	12,000	19,000	22,000	22,000	22,000
150,000	2000	3000	4000	6000	8000	14,000	22,000	25,000	25,000	25,000
200,000	2000	3000	4000	6000	9000	16,000	24,000	28,000	28,000	28,000

1 — Low voltage, branch circuit fuses

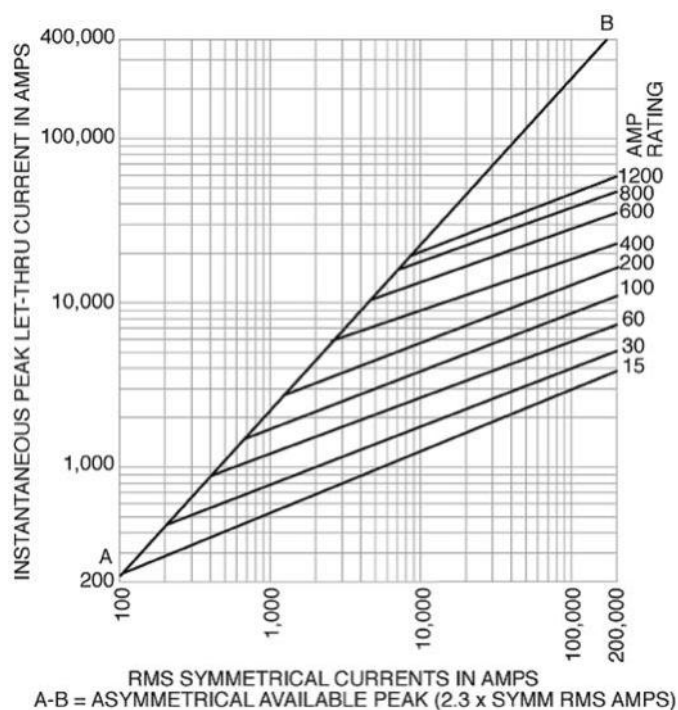
JJN Time-current characteristics — average melt



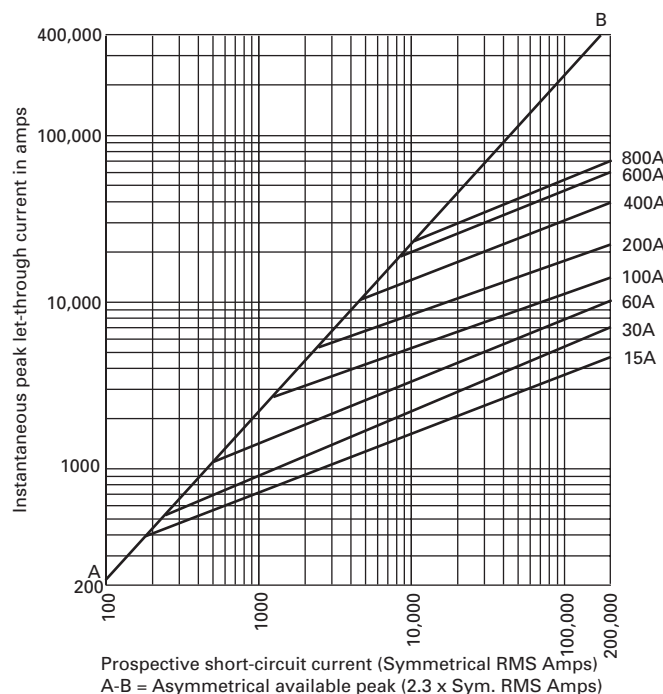
JJS Time-current characteristics — average melt



JJN Current limitation curves



JJS Current limitation curves



W plug fuses

Fast-acting Edison base plug fuse.

Ratings

- Volts 125 Vac
- Amps 1/2-12 A
- IR 10 kA RMS Sym.

Agency information

- UL Listed, Std 248-11, Guide JEFV, File E12112, CE

Features

- Dependable, fast-acting circuit protection with 10 kA interrupting rating for added safety when applied to existing plug fuse systems and 125 volt single-phase control circuits

Typical applications

- Replacement fuses for existing systems
- For general purpose circuit protection
- Lighting and other non-motor circuits



Catalog no.* (amps)

W-1/2	W-2-1/2	W-6	W-10
W-1	W-3	W-6-1/2	W-12
W-1-8/10	W-4	W-7	W-DUMMY**
W-2	W-5	W-8	

* W-15 to W-30 plug fuses obsolete. Replace with either T-(amp) or TL-(amp) Edison base plug fuses.

**Non-conductive dummy base NOT a fuse.

Recommended box cover units for W plug fuses, see page 1-30.

SL rejection base and TL Edison base plug fuses

Time-delay, loaded link Edison (TL) and rejection base (SL) plug fuses.

Rating

- Volts 125 Vac
- Amps 15-30 A
- IR 10 kA RMS Sym.

Agency information

- UL Listed, Std 248-11, Guide JEFV, File E12112, CE

Features

- Time-delay loaded link TL Edison base plug fuses pass motor overload starting currents without opening and allow closer sizing to motor load for added protection
- Time-delay loaded link SL fuses provide a rejection feature (when used alone or with Fustat adapters to retrofit Edison base holders) to help prevent overfusing

Typical applications

- Small motor and inductive load circuits with high in-rush current levels
- TL for box cover units to provide small motor overload protection
- SL for applications benefiting from fuse rejection

Catalog no. (amps)

Rejection base SL

SL-15	SL-20	SL-25	SL-30
-------	-------	-------	-------

Edison base TL

TL-15	TL-20	TL-25	TL-30
-------	-------	-------	-------

Recommended box cover units for SL and TL plug fuses, see page 1-30. For Fustat™ Edison base adapters for use with SL fuses see page 1-29.



S rejection base and T Edison base plug fuses

Dual-element, time-delay Edison (T) and rejection base (S) plug fuses.

Rating

- Volts 125 Vac
- Amps
 - S 1/4-30 A
 - T 3/10-30 A
- IR 10 kA RMS Sym.

Agency information

- UL Listed, Std 248-11, Type S and T (0 to 6-1/4) Guide JFHR, File E56412 (7 to 30 A) Guide JEFV, File E12112; CSA Certified, Class 1423-01, File 53787, CE

Features

- T Edison base fuses provide small motor overload protection when used with box cover units
- S rejection base fuses provide a rejection feature (when used alone or with Fustat adapters to retrofit Edison base holders) to prevent overfusing of branch circuits

Typical applications

- S for residential load centers
- T for box cover units to provide small motor overload protection
- Applications benefiting from fuse rejection to help prevent overfusing (S only)



P and TC CSA plug fuses

CSA Edison base Type P (P) dual-element fuses and Type D (TC) dual-element, time-delay fuses.

Ratings

- Volts 125 Vac or less
- Amps 15-30 A
- IR 10 kA

Agency information

- P - CSA Certified
- TC - CSA Certified, Class 1423-01, File 53787

Features

- P
 - "P" rating addresses the need of Canadian applications
 - Non-time delay protects non-inductive loads
- TC
 - "D" rating addresses the need of Canadian applications
 - Heavy duty TC fuses are industrial strength products, featuring dual-element construction
 - This spring loaded design provides superior short-circuit and overload protection
 - The TC fuses have more time-delay than the medium duty fuses in order to better protect industrial motors and residential circuits

Typical applications

- P for non-inductive loads, residential load centers
- TC for box cover units to provide small motor overload protection



Catalog no. (amps)			
Rejection base S			
S-1/4	S-1-4/10	S-3-1/2	S-20
S-3/10	S-1-6/10	S-4	S-25
S-4/10	S-1-8/10	S-7	S-30
S-1/2	S-2	S-8	
S-6/10	S-2-1/4	S-9	
S-8/10	S-2-1/2	S-10	
S-1	S-2-8/10	S-12	
S-1-1/8	S-3	S-14	
S-1-1/4	S-3-2/10	S-15	
Edison base T			
T-3/10	T-1-6/10	T-4	T-10
T-4/10	T-1-8/10	T-4-1/2	T-12
T-1/2	T-2	T-5	T-14
T-6/10	T-2-1/4	T-5-6/10	T-15
T-8/10	T-2-1/2	T-6	T-20
T-1	T-2-8/10	T-6-1/4	T-25
T-1-1/8	T-3	T-7	T-30
T-1-1/4	T-3-2/10	T-8	
T-1-4/10	T-3-1/2	T-9	

Recommended box cover units for S and T plug fuses, see page 1-30. For Fustat Edison base adapters for use with SL fuses see page 1-29.

Data sheet no. 1032 (S) and 1034 (T)

Catalog no. (amps)			
Type P			
P-15	P-20	P-25	P-30
Type D			
TC-15	TC-20	TC-25	TC-30

Recommended box cover units for P and TC plug fuses, see page 1-30.

Data sheet no. 1039 (TC)

MB Edison base circuit breakers

Edison base manual reset circuit breakers.

Ratings

- Volts 125 Vac only
- Amps 15 and 20 A
- IR 10 kA RMS Sym.

Agency information

- UL Listed, File E14942

Features

- Edison base circuit breakers fit standard Edison base fuse sockets to provide resettable overcurrent protection (correct cause of overcurrent event before resetting)

Typical applications*

- Replacing Edison base plug fuses in residential fuse panels



SA Fustat fuse adapters

Adapters for using Type S and SL rejection base fuses in Edison base fuse sockets. Amp rating rejection feature helps prevent overfusing.

Ratings

- Volts 125 Vac
- Amps 1-30 A

Agency information

- UL Listed, File E12853, CSA Certified, Class 6225-01, File 47235

Features

- Fustat adapters screw into the "Edison" thread fuse sockets to easy retrofit existing fuse installations to rejection base fuses
- Available in various amp ratings to cover a wide range of rating requirements to help prevent overfusing

Typical applications

- Plug fuse installations where it is desirable to restrict fuse amp ratings and help prevent overfusing



Catalog no.* (amps)

Catalog no.* (amps)	
MB-15	MB-20

* Not for use in box cover units or for inductive loads.

Catalog no.	Accepts S fuses	Accepts SL fuses
SA-1*	S-1 or smaller	—
SA-1-1/4*	S-1-1/4 or smaller	—
SA-1-6/10*	S-1-6/10 or smaller	—
SA-2*	S-2 or S-1-8/10	—
SA-2-1/2*	S-2-1/2 to S-1-8/10	—
SA-3-2/10*	S-3-2/10 to S-1-8/10	—
SA-4*	S-4 to S-3-1/2	—
SA-5*	S-5 to S-3-1/2	—
SA-6-1/4*	S-6-1/4 to S-3-1/2	—
SA-8*	S-8 to S-7	—
SA-10*	S-10 to S-7	—
SA-15**	S-15 to S-7	SL-15
SA-20**	S-20	SL-20
SA-30**	S-30 to S-25	SL-52, SL-30

* Single motor circuits - both running and short-circuit protection.

**Branch circuits.

1 — Low voltage, branch circuit fuses

Box cover units for Edison base plug fuses

SOU, SRU, SSU, SOW, SRW, SSW, SOX, SRX, SOY, SRY, SSY, SSY-RL, STY, SCY, SOY-B and SSN

Box cover units for standard electrical boxes provide supplemental fuse protection for small motor circuits and other loads requiring overcurrent protection below that of the branch circuit overcurrent protective device. Versions are available for a fused outlet, switch or plain circuit that fit standard sized electrical boxes. See catalog numbers for available configurations by box type.

Use with SA adaptors and S or SL Type fuses may prevent fuse cover from closing. Not recommended for use with MB-15 Edison base circuit breaker.



Ratings

- Volts 125 V
- Amps 15 A

Agency information

- UL Listed, Guide JAMZ, File IE6491
- CSA Class 6225-01, File 47235

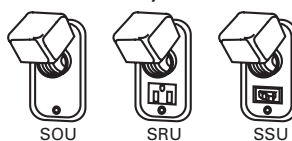
Features

- A low-cost method of controlling and protecting small motors when used with Bussmann series Type T dual-element fuses
- Low-cost supplemental protection and disconnection of 125 V or less, single-phase circuits

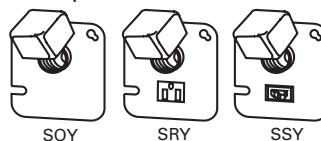
Typical applications

- Fractional horsepower, 125 volt single-phase motor circuits
- General 125 volt supplemental circuits

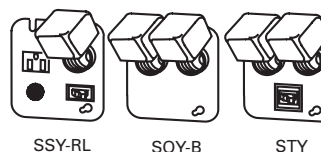
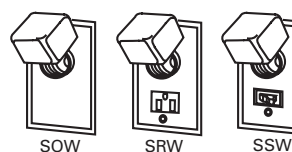
2-1/4" handy box units



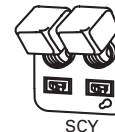
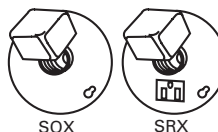
4" square box units



2-3/4" switch box units



4" octagon box units



Catalog no.	Box type	Fuse sockets	Switch control ¹	Pilot light ²	Max motor size (Hp)	Description	Agency information
SOU	2-1/4" Handy	1			3/4	Fuse receptacle only (no switch or outlet)	UL, CSA
SRU		1			1/2	Fused outlet	UL
SSU		1	X		1/2	Fused switch	UL, CSA
SOW	2-3/4" Switch	1			3/4	Fuse receptacle only (no switch or outlet)	UL, CSA
SRW		1			1/2	Fused outlet	UL
SSW		1	X		1/2	Fused switch	UL, CSA
SOX	4" Octagon	1			3/4	Fuse receptacle only (no switch or outlet)	UL, CSA
SRX		1			1/2	Fused outlet	UL
SOY	4" Square	1			3/4	Fuse receptacle only (no switch or outlet)	UL, CSA
SRY		1			1/2	Fused outlet	UL
SSY		1	X		1/2	Fused switch	UL, CSA
SSY-RL		1	X	X	1/2	Fused switch/outlet with pilot light	—
STY ³		2	X		1/2	Fused double pole switch, dual fuse receptacles	UL
SCY ⁴		2			1/2	Dual fused switches	UL
SOY-B		2			3/4	Dual fuse receptacles only (no switch or outlet)	UL
SSN	Single gang	1	X		1/2	Weatherproof fused switch	UL

¹ Switch turns power to fused load OFF or ON.

² Pilot light indicates power to load (dark when switch OFF or fuse open).

³ Double pole switch opens both sides of circuit.

⁴ Can be used for two separate motors with common switch or a single motor (3/4 Hp, 250 Vac max).

Bussmann series Fuses Made Simple™ - Control Circuits

The easiest and fastest way
to select and specify the right
control circuit fuse



Contents

Description	Section page
Fuse holder and block selection guide	2
Product	Catalog symbol
Limiters	
Cable limiters	K (600 V) UH (250 V) 3
Welder limiters	64000 (600 V) 68000 (600 V)
Bolt-on	ANN (125 V very fast-acting) ANL (80 V non time-delay) 4164 and 4164-FR blocks 4
Supplemental fuses	
13/32" x 1-1/2" fast-acting	BAF (250 V) KTK (600 V) KLM (600 V) 5
13/32" x 1-1/2" time-delay	FNM (250 V) FNQ (500 V) 6
13/32" x 1-3/8" fast-acting	BBS (600 V) 7
Pin indication and actuator	GBA (125 V) GLD (125 V) 8 MIC (250 V fast-acting) FNA 250 V time-delay) MIS (600 V) KAZ (600 V) 9
In-line fuses	
size rejecting	GLQ GMQ 10
size rejecting holder	HLO
Non size-rejecting fuses and holders	GLR GMF GRF 11
Non size-rejecting fuse holders	HLR HLR-2A
Blade fuses and holders	
Fuses	ATR micro ATM ATM_ID ATM-LP 12
	ATC ATC_ID MAX MAX_ID 13
In-line fuse holders	HH2 (ATR) ATC-FHID (ATC) HHC (ATC) HHD (ATC) HHF (ATC) HHG (ATC) HHR (ATC) HHS (ATC) ATM-FHID (ATM) HHL (ATM) HHM (ATM) HHU (ATM) 14 HHX (MAX) MAX-FHID (MAX))
PCB fuseclips	
ATC	1A5600 1A5780
ATM	1A5778 1A5779

Low voltage,
supplemental fuses

Fuse holder and block selection guide

Catalog pages for the blocks and holders are denoted parenthetically "()" next to their catalog symbol.

Fuse	Catalog symbol	Blocks	DIN-Rail holders	Panel mount holders	In-line holders	PCB fuseclips
Cable limiters	K_ UH_	— —	— —	— —	— —	— —
Welder limiters	64000 68000	RM60_ (8-21)	—	—	—	—
Bolt-on limiters	ANN ANL	4164 (2-4) 4164-FR (2-4)	—	—	—	—
13/32" x 1-1/2" supplemental fuses	BAF FNM FNQ KLM KTK	BMM603_ (8-6) 3743 (8-14) 4421 (8-14) 4515 (8-14)	CCP2-_ (11-2) OPM-1038_ (8-12) OPM-NG_ (8-13) CHM (8-8) NDNF1-VWH (8-11)	CCPLP ^{††} (30 A) (11-32) HPC-D (8-43) HPD (8-44) HPF (8-43) HPG (8-44) HPM (8-44) HPM-D (8-44) HPS2 (8-45) HPS (8-45)	HEB (8-51) HEX (8-53)	1A3400_ (3-16) 5960 (3-16)
13/32" x 1-3/8" supplemental fuses	BBS	BMM603_ (8-6)	—	HPS-L (8-45)	HEH (8-49)	1A3400_ (3-16) 5960 (3-16)
Pin indication fuses and actuator	GBA GLD	—	—	HLD (8-43)	—	1A1119 (3-15) 1A1120 (3-15) 1A1907 (3-15) 1A3398 (3-15) 1A4533 (3-15) 1A4534 (3-15) 5681 (3-16) 5682 (3-16)
	MIC FNA	BMM603_ (8-6) 3839 [†]	—	HPF-C (8-43)	—	1A3400_ (3-16) 5960 (3-16)
	MIS fuse KAZ actuator	2778 [†] 2837 [†] 2838 [†]	—	—	—	1A3400_ (3-16) 5960 (3-16)
In-line size rejecting fuses	GLQ GMO	—	—	—	HLQ (2-10)	—
In-line non-rejecting fuses	GLR GMF GRF	—	—	—	HLR (2-11) HLR-2A (2-11)	—
Automotive blade-type fuses	ATC ATC_ID	FB_-ATC* 15600*	—	—	ATC-FHID (2-14) HHC (2-14) HHD (2-14) HHF (2-14) HHG (2-14) HHR (2-14) HHS (2-14)	1A5600 (2-14) 1A5780 (2-14)
	ATM ATM_ID	FB_-ATM* RTMF-_*	—	—	ATM-FHID (2-14) HHL (2-14) HHM (2-14) HHU (2-14)	1A5778 (2-14) 1A5779 (2-14)
	ATM-LP	FB_-ATM* RTMF-_*	—	—	HHV (2-14)	—
	ATR micro	FB_-ATR*	—	—	HH2 (2-14)	—
	MAX MAX_ID	—	—	—	HHX (2-14) MAX-FHID (2-14)	—

* Not shown in this catalog, for details and available configurations, see Automotive and Home center catalog no. 5084.

† Not shown in this catalog, see data sheet for details.

†† UL 508 Listed disconnect switch, available in 1-, 2- and 3-pole versions.

K 600 V cable limiters

Cable limiters for protecting 600 V low voltage distribution and service entrance cables against short-circuit currents.

Ratings

- Volts 600 Vac
- IR 200 kA RMS Sym. @ 600 Vac

Agency information

- UL Listing KDM, KDR, KDP and KFM, KCM, KCM-B and KCR

Features

- Sizes and ratings available to meet many applications



Catalog no.	Cable size (AWG)	Catalog no.	Cable size (AWG)
*Tubular terminals			
KCY	4	KCF	4/0
KCZ	3	KCH	250 kcmil
KCA	2	KCJ ^{1, 2}	350 kcmil
KCB	1	KCM ^{1, 2, 3}	500 kcmil
KCC	1/0	KCV	600 kcmil
KCD ^{1, 2}	2/0	KCR ^{1, 2}	750 kcmil
KCE	3/0	KCS	1000 kcmil
*Tubular and offset bolt-type terminals			
KQV	12	KDD	2/0
KQT	10	KDE	3/0
KFZ	8	KDF	4/0
KIG	6	KDH	250 kcmil
KDY	4	KDJ ³	350 kcmil
KDA	2	KDM ^{1, 3}	500 kcmil
KDB	1	KDU	600 kcmil
KDC	1/0	KDR ^{1, 2}	750 kcmil
*Compression connector rod and tubular terminals			
KEX	4/0	KQO	350 kcmil
KFH-A	250 kcmil	KDT	500 kcmil
**Center bolt-type and off-set bolt-type terminals			
KPF	4/0	KDP ¹	500 kcmil
KFT	250 kcmil	KFM ¹	750 kcmil
KEW	350 kcmil		

* Copper conductors only.

** Copper or aluminum conductors.

1 UL Listed (File E90818), 600 Vac, 200 kA I.R.

2 Available with shrink tube "-V" suffix.

3 Available with molded rubber boots.

Accessory boots (order separately)

Limiter	Boot catalog no.	Limiter	Boot catalog no.
KCM	BOOT-KCM	KDM	BOOT-KDM

Recommended Thomas and Betts crimp tool TBM-14M with die 15506 KDM/15515 KDR for installation.

UH 250 V cable limiters

Cable limiters for protecting 250 V low voltage distribution and service entrance cables used in residential applications against short-circuit currents.

Ratings

- Volts Up to 250 Vac
- IR 100 kA RMS Sym.

Terminals and conductors

- Center bolt-to-offset bolt terminals, Cu or Al conductors
- Cu or Al conductors are permitted per the listed cable size. Select the catalog number for the conductor size. See data sheet 1042 for dimensions.



Catalog no.	Cu cable size (AWG)	Al cable size (AWG)
UHA	3/0	4/0
UHJ-M	3/0	250 kcmil
UHJ-T	350 kcmil	500 kcmil
UHJ-W	600 kcmil	800 kcmil

Data sheet no. 1042

64000 and 68000 600 V welder limiters

Limiters for use on welder circuits. **Note:** welder limiters have special characteristics and are not suitable for use on other circuit types.

Ratings

- Volts 600 Vac (or less)
- IR 200 kA RMS Sym.

Features

- Current-limiting devices designed specially for use only on welder circuits
- Time-current characteristics are designed to hold on the intermittent overloading encountered in welder operation, while providing short-circuit protection to the circuit and equipment



Catalog no.	Fuse holder type	Nominal amp rating
68300	Class H	300
68600	Class H	600
64200	Class J	200
64300	Class J	300

Recommended fuse blocks, see page 2-2.

ANL/ANN limiters

Circuit limiters typically used in fork lifts, marine, aviation and battery charging systems. ANL limiters are non-time-delay and ANN limiters are very fast-acting. Both ANL and ANN limiters measure 7/8" x 3-3/16" (22x81mm) with a depth that varies by amp rating.

Ratings

- Volts
 - ANL 80 Vdc
 - ANN 125 Vac, 80 Vdc
- Amps
 - ANL 35-750 A
 - ANN 10-800 A
- IR
 - ANL 2700 A @ 80 Vdc
 - ANN 2500 A @ 125 Vac, 2700 A @ 80 Vdc



Non-time-delay ANL



Very fast-acting ANN

Agency information

- ANL: UL Recognized, CSA Certified, 35-750 A @ 80 Vdc, IR 2700 A, Guide JFHR2, File E56412, Class 1422-30, File 53787, SAE J1171
- ANN: UL Recognized, CSA Certified 35-400 A @ 125 Vac, IR 2500 A and 500 A @ 80 Vdc, IR 2700 A, Guide JFHR2, File E56412, Class 1422-30, File 53787, CE for 35-400 A

4164 and 4164-FR limiter blocks

Limiter fuse blocks for ANL and ANN. 4164 is furnished with nylon inserted locknuts and 4164-FR is furnished with standard hex nuts.



4164



4164-FR

Dimensions

- L 3.38" x W 0.95" x H 1.62"
- Studs center-to-center 2.43"

Ratings

- Volts 125 Vac, 80 Vdc, 32 Vdc (self certified)
- Amps 10-800 A
- Poles single, stud terminal

Data sheet no. 2133

Catalog no. (amps)

Time-delay ANL

ANL-35	ANL-125	ANL-250	ANL-500
ANL-40	ANL-130	ANL-275	ANL-600
ANL-50	ANL-150	ANL-300	ANL-675
ANL-60	ANL-175	ANL-325	ANL-750
ANL-80	ANL-200	ANL-350	
ANL-100	ANL-225	ANL-400	

Fast-acting ANN

ANN-10	ANN-90	ANN-225	ANN-400
ANN-35	ANN-100	ANN-250	ANN-500
ANN-40	ANN-125	ANN-275	ANN-600
ANN-50	ANN-150	ANN-300	ANN-700
ANN-60	ANN-175	ANN-325	ANN-800
ANN-80	ANN-200	ANN-350	

Features

- Time-delay sizing for inductive circuits (ANL)
- Fast-acting circuit protection (ANN)
- Element viewing window shows limiter status at a glance

BAF fast-acting 13/32" x 1-1/2" supplemental fuse

Fast-acting, supplemental fuse.
Green color code (250 Vac max).
For superior protection, Eaton
recommends upgrading to
Bussmann series Low-Peak Class
CC fuses. See data sheet no. 1023.



Ratings

Fuse amp range	IR at system voltage		Agency information	
	250 Vac	125 Vac	UL	CSA
1/4 to 1	35 A	10 kA	—	X
1-1/2 to 2-1/2	100 A	10 kA	—	X
3	100 A	10 kA	X	X
4 to 10	200 A	10 kA	X	X
12 to 15	750 A	10 kA	X	X
20 to 30	200 A	10 kA	—	—

Agency information

- UL Listed, Std. 248-14, 250 Vac (3 to 15 A) Guide JDYX, File E19180, CSA Certified, 250 Vac (1/4 to 15 A) Class 1422-01, File 53787

Catalog no. (amps)			
BAF-1/4	BAF-1-8/10	BAF-6	BAF-12
BAF-1/2	BAF-2	BAF-6-1/4	BAF-15
BAF-6/10	BAF-2-1/2	BAF-7	BAF-20
BAF-8/10	BAF-3	BAF-8	BAF-25
BAF-1	BAF-4	BAF-9	BAF-30
BAF-1-1/2	BAF-5	BAF-10	

Features

- Green color code for maximum 250 Vac rating
- Fiber tube construction with nickel-plated brass endcaps

Typical applications

- General purpose circuits
- Lighting circuit protection
- Meter circuits

Recommended blocks and holders for 13/32" x 1-1/2" fuses, see page 2-2.

KTK fast-acting 13/32" x 1-1/2" supplemental fuse

Fast-acting supplemental fuse.
Black color code (600 Vac max).
For superior protection, Eaton
recommends upgrading to
Bussmann series Low-Peak Class
CC fuses. See data sheet no. 1023.



Ratings

Fuse amp range	IR at rated voltage		Agency information	
	600 Vac		UL	CSA
1/10 to 30	100 kA		X	X

Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180, CSA Certified, C22.2 No. 248.14, Class 1422-01, File 53787, HRC-MISC, RoHS compliant, CE

Catalog no. (amps)			
KTK-1/10	KTK-3/4	KTK-4	KTK-12
KTK-1/8	KTK-1	KTK-5	KTK-15
KTK-2/10	KTK-1-1/4	KTK-6	KTK-20
KTK-1/4	KTK-1-1/2	KTK-7	KTK-25
KTK-3/10	KTK-2	KTK-7-1/2	KTK-30
KTK-4/10	KTK-2-1/2	KTK-8	
KTK-1/2	KTK-3	KTK-9	
KTK-6/10	KTK-3-1/2	KTK-10	

Features

- Black color code for 600 Vac rating
- Fast-acting for resistive loads
- Melamine tube construction with nickel-plated bronze endcaps

Typical applications

- Control circuits
- Lighting circuit protection
- Meter circuits

Recommended blocks and holders for 13/32" x 1-1/2" fuses, see page 2-2.

2 — Low voltage supplemental fuses

KLM fast-acting 13/32" x 1-1/2" supplemental fuse

Fast-acting supplemental fuse. Color code black (600 Vac/dc max). For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak Class CC fuses. See data sheet no. 1023. For protecting PV systems, use PVM 10x30mm PV fuses. See data sheet no. 10121.



Ratings

Fuse amp range	IR at rated voltage		Agency information	
	600 Vac	600 Vdc	UL	CSA
1/10 to 30	100 kA	50 kA	X	X

Electrical characteristics

% of amp rating	Opening time
110%	4 hours minimum
135%	AC opens within 1 hour

Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180, CSA Certified, C22.2 No. 248. 14, Class 1422-01, File 53787, RoHS compliant, CE

Catalog no. (amps)			
KLM-1/10	KLM-1	KLM-5	KLM-15
KLM-1/8	KLM-1-1/4	KLM-6	KLM-20
KLM-2/10	KLM-1-1/2	KLM-7	KLM-25
KLM-1/4	KLM-2	KLM-8	KLM-30
KLM-3/10	KLM-2-1/2	KLM-9	
KLM-1/2	KLM-3	KLM-10	
KLM-3/4	KLM-4	KLM-12	

Features

- Color coded for 600 Vac/dc maximum
- A full range DC performance fuse
- Melamine tube construction with nickel-plated brass endcaps

Recommended fuse blocks and holders for 13/32" x 1-1/2" fuses, see page 2-2.

FNM time-delay 13/32" x 1-1/2" supplemental fuse

Time-delay supplemental fuse. Color code green (250 Vac max). For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak Class CC fuses. See data sheet no. 1023.



Ratings

Fuse amp range	IR at system voltage		Agency information	
	250 Vac	125 Vac	UL	CSA
1/10 to 1	35 A	10 kA	X	X
1-1/8 to 3-1/2	100 A	10 kA	X	X
4 to 10	200 A	10 kA	X	X
12 to 30	10 kA	—	X	X

Agency information

- UL Listed, Std. 248-14, Guide JDYX; File E19180, CSA Certified, Class 1422-01, File 53787, RoHS compliant, CE

Catalog no. (amps)			
FNM-1/10	FNM-8/10	FNM-2-1/2	FNM-6-1/4
FNM-1/8	FNM-1	FNM-2-8/10	FNM-7
FNM-15/100	FNM-1-1/8	FNM-3	FNM-8
FNM-2/10	FNM-1-1/4	FNM-3-2/10	FNM-9
FNM-1/4	FNM-1-4/10	FNM-3-1/2	FNM-10
FNM-3/10	FNM-1-1/2	FNM-4	FNM-12
FNM-4/10	FNM-1-6/10	FNM-4-1/2	FNM-15
FNM-1/2	FNM-1-8/10	FNM-5	FNM-20
FNM-6/10	FNM-2	FNM-5-6/10	FNM-25
FNM-3/4	FNM-2-1/4	FNM-6	FNM-30

Features

- Color coded for 250 Vac maximum
- Melamine tube construction with nickel-plated brass endcaps

Typical applications

- Circuits with high inrush currents (motor/transformer loads)
- Supplemental protection for 125 Vac and 250 Vac inductive circuits

Recommended fuse blocks and holders for 13/32" x 1-1/2" fuses, see page 2-2.

FNQ time-delay 13/32" x 1-1/2" supplemental fuse

Time-delay supplemental fuse. Color code orange (500 Vac max). For superior protection, Eaton recommends upgrading to Bussmann series Limitron FNQ-R Class CC fuses. See data sheet no. 1014.



Ratings

Fuse amp range	IR at rated voltage	Agency information	
	500 Vac	UL	CSA
1/10 to 30	10 kA	X	X

Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180, CSA Certified, C22.2 No. 248.14, Class 1422-01, File 53787, HRC-MISC, RoHS compliant, CE

Catalog no. (amps)			
FNQ-1/10	FNQ-8/10	FNQ-3-2/10	FNQ-9
FNQ-1/8*	FNQ-1	FNQ-3-1/2	FNQ-10
FNQ-15/100*	FNQ-1-1/8	FNQ-4	FNQ-12
FNQ-3/16	FNQ-1-1/4	FNQ-4-1/2	FNQ-14
FNQ-2/10	FNQ-1-1/2	FNQ-5	FNQ-15
FNQ-1/4	FNQ-1-6/10	FNQ-5-6/10	FNQ-20
FNQ-3/10	FNQ-2	FNQ-6	FNQ-25
FNQ-4/10	FNQ-2-1/4	FNQ-6-1/4	FNQ-30
FNQ-1/2	FNQ-2-1/2	FNQ-7	
FNQ-6/10	FNQ-3	FNQ-8	

* Not RoHS compliant.

Features

- Color coded for 500 Vac maximum
- Fiber tube construction with nickel-plated brass endcaps

Typical applications

- Motor control transformers
- Circuits with in-rush currents

Recommended blocks and holders for 13/32" x 1-1/2" fuses, see page 2-2.

BBS fast-acting 13/32" x 1-3/8" supplemental fuse

Fast-acting supplemental fuse. Color codes black (600 Vac max 1/10 to 6 A), green (250 Vac max 7 to 10 A), purple (48 Vac max 12 to 30 A). (For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak Class CC fuses. See data sheet no. 1023.



Ratings

Fuse amp range	IR at system voltage			Agency information	
	600 Vac	250 Vac	48 Vac	UL	CSA
1/10 to 6	10 kA	—	—	X	X
7 to 10	—	10 kA	—	X	X
12 to 30*	—	—	—	—	—

* For interrupting rating, contact factory.

Agency information

- UL Listed, Std. 248-14 (1/10-6 A@600 Vac, 7-10 A@250 Vac), Guide JDYX, File E19180, CSA Certified, C22.2 No. 248.14 (1/10-6 A@600 Vac, 7-10 A@250 Vac), Class 1422-01, File 53787, CE

Catalog no. (amps)			
BBS-1/10	BBS-8/10	BBS-4	BBS-15
BBS-2/10	BBS-1	BBS-5	BBS-20
BBS-1/4	BBS-1-1/2	BBS-6	BBS-25
BBS-4/10	BBS-1-6/10	BBS-7	BBS-30
BBS-1/2	BBS-1-8/10	BBS-8	
BBS-6/10	BBS-2	BBS-10	
BBS-3/4	BBS-3	BBS-12	

Features

- Color coded for 600 Vac (black) 250 Vac (green) and 48 Vac (purple) for maximum
- Fiber tube construction with nickel-plated brass endcaps

Typical applications

- Control circuits
- Gaseous vapor fixtures
- HID ballasts
- Electronic circuits
- Hand-held meters

Recommended blocks and holders for BBS fuses, see page 2-2.

Low voltage, supplemental fuses

2 — Low voltage supplemental fuses

GBA/GLD fast-acting 1/4" x 1-1/4" pin-indicating supplemental fuse

Fast-acting, pin-indicating fuse.

Ratings

- Volts — see agency information
- Amps 1/2-15 A
- IR — see agency information



Agency information

- UL Listed, Std. 248-14, 0-5 A/125 Vac, 10,000 AIC, Guide JDYX, File E19180
- UL Recognized, 6 A/125 Vac, 1000 AIC 8-15 A/50 Vac/dc, 300 AIC Guide JDYX2, File E19180
- CSA Certified, 0-5 A/125 Vac, 10,000 AIC Class 1422-01, File 53787
- CE

Catalog no. (amps)

GBA

GBA-1/2	GBA-1-1/2	GBA-4	GBA-10
GBA-3/4	GBA-2	GBA-5	GBA-15
GBA-1	GBA-3	GBA-8	

GLD

GLD-1/2	GLD-1-1/2	GLD-4	GLD-10
GLD-3/4	GLD-2	GLD-5	GLD-12
GLD-1	GLD-3	GLD-6	GLD-15

Features

- Type GBA has a "red" pin indicator providing visual identification of failed circuits, resulting in faster troubleshooting (reduced circuit downtime)
- Type GLD has a plated pin to activate transmitting a electrical signal to indicate the location of opened circuits, resulting in reduced downtime

Typical applications

- Control circuits
- Electronic circuits

Recommended fuse blocks/fuse holders for 1/4" x 1-1/4" indicating fuses, see page 2-2.

MIC fast-acting 13/32" x 1-1/2" pin-indicating supplemental fuse

Fast-acting, pin-indicating supplemental fuse. Green color code (250 Vac max 1 to 15 A), gray (32 Vac max 20 to 30 A).



Ratings

Fuse amp range	IR at voltage rating		Agency information	
	250 Vac	32 Vac	UL	CSA
1	35 A	—	X	—
2 to 3	100 A	—	X	—
5 to 10	200 A	—	X	—
15	750 A	—	X	—
20 to 30	—	10 kA	—	—

Electrical characteristics

% of fuse rating	Opening time
110%	Indefinitely
135%	1 hour max.

Agency information

- UL Listed, Std. 248-14, 1-15 A, Guide JDYX, File E19180, CE

Catalog no. (amps)

MIC-1	MIC-5	MIC-15	MIC-30
MIC-2	MIC-8	MIC-20	
MIC-3	MIC-10	MIC-25	

Features

- Color coded by maximum voltage rating
- Pin indication for visual indication of open fuse condition
- Silver-plated pin for positive, electrical signal activation
- Fiber tube construction with nickel-plated bronze endcaps

Typical applications

- Power electronic circuits in which fuse opening must be quickly apparent
- Control circuits
- PLC Circuits

Recommended signal block for, 13/32" x 1-1/2" indicating fuses, see page 2-2.

FNA time-delay 13/32" x 1-1/2" pin-indicating supplemental fuse

Pin-indicating time-delay supplemental fuse. Color coded green (250 Vac max 1/10 to 6 A), blue (125 Vac max 6-1/4 to 15 A) and gray (32 Vac max 20 to 30 A).



Dual-tube construction 12A and up

Ratings

Fuse amp range	IR at system voltage			Agency information	
	250 Vac	125 Vac	32 Vac	UL	CSA
1/10 to 8/10	35 A	10 kA	—	X	X
1 to 6	200 A	10 kA	—	X	X
6-1/4 to 15	—	10 kA	—	X	X
20 to 30	—	—	1 kA	—	—

Agency information

- UL Listed, 1/10 to 8/10 A @ 125/250 Vac, 1-15 A @ 125 Vac, Guide JDYX, File E19180, CSA Certified, 1/10 to 10 A @ 125 Vac, Class 1422-01, File 53787, CE

Catalog no. (amps)			
FNA-1/10	FNA-1	FNA-3	FNA-9
FNA-1/8	FNA-1-1/8	FNA-3-2/10	FNA-10
FNA-15/100	FNA-1-1/4	FNA-3-1/2	FNA-12
FNA-2/10	FNA-1-4/10	FNA-4	FNA-15
FNA-1/4	FNA-1-1/2	FNA-4-1/2	FNA-20
FNA-3/10	FNA-1-6/10	FNA-5	FNA-25
FNA-4/10	FNA-1-8/10	FNA-5-6/10	FNA-30
FNA-1/2	FNA-2	FNA-6	
FNA-6/10	FNA-2-1/4	FNA-6-1/4	
FNA-3/4	FNA-2-1/2	FNA-7	
FNA-8/10	FNA-2-8/10	FNA-8	

Features

- Color coded by maximum voltage rating
- Pin-indication for visual indication of open fuse condition
- Dual-element, time-delay performance permits close sizing on control transformers and relays
- Silver-plated pin for positive, electrical signal activation
- 12 amp and more versions are dual-tube construction

Recommended signal block for 13/32" x 1-1/2" indicating fuses, see page 2.2.

MIS non time-delay 13/32" x 2" pin-indicating supplemental fuse and KAZ non-fuse pin-indicating actuator

MIS is a non time-delay pin-indicating fuse.

KAZ is a non-fuse actuator mounted in parallel with fuses having a 50 amp or larger rating to provide blown fuse dropout for shunt-trip fused switches. To order, specify catalog number **KAZ**.



Low voltage, supplemental fuses

Ratings

	MIS fuse	KAZ actuator
Volts	600 Vac	600 Vac
Amps	1-12 A	N/A
IR	200 kA	200 kA

MIS fuse electrical characteristics

MIS Fuse	Load	Opening time
All	110%	4 hrs. (min.)
1-5 A	150%	6 min. (max.)
6-12 A	150%	12 min. (max.)

MIS fuse catalog no. (amps)

MIS-1	MIS-3	MIS-5	MIS-10
MIS-2	MIS-4	MIS-8	MIS-12

KAZ agency information

- UL Listed, Guide JDVS, File E58836, CE

MIS fuse features

- Pin indicator provides visual identification of failed circuits, resulting in faster troubleshooting (reduced circuit downtime)
- Fuse can be used in circuits rated 600 V or less
- High 200 kA interrupting rating for high fault current circuits

MIS fuse typical applications

- 480 V control circuits
- PLC circuits

KAZ actuator features

- Convenient means to add open fuse signaling
- Actuator can be used in circuits rated 600 V or less
- High 200 kA interrupting rating for high fault current circuits

KAZ actuator typical applications

- Large, shunt-trip fused switches
- Fuse protected circuits rated 50 A or larger with shunt-trip devices

Recommended signal blocks for MIS and KAZ, see page 2-2.

GLQ fast-acting, size-rejecting supplemental fuse

Fast-acting, size-rejecting in-line fuse. Match fuse and holder amp rating per catalog number table below.



Ratings

- Volts 300 Vac (or less)
- Amps 1-10 A
- IR 10 kA

Agency information

- UL Listed, Std. 248-14, (Guide JDYX, File E19180), CSA Certified C22.2 No. 248.14, (Class 1422-01, File 53787), CE

Catalog no. (amps) and holders

Fuse	Holder ^{1, 2}	Fuse	Holder ^{1, 2}
GLQ-1	HLQ-1-6/10	GLQ-3	HLQ-3-2/10
GLQ-1-1/2	HLQ-1-6/10	GLQ-4	HLQ-5
GLQ-1-6/10	HLQ-1-6/10	GLQ-5	HLQ-5
GLQ-2	HLQ-3-2/10	GLQ-9	HLQ-10
GLQ-2-1/2	HLQ-3-2/10	GLQ-10	HLQ-10

1 Carrier is UL Recognized, Guide IZLT2, File E14853 and CSA Certified, Class 6225-01, File 47235 10 A, 300 Vac.

2 Units can be panel-mounted either in a knockout hole with a separate steel clip (BK/A-104) or in a keyhole punch using separate mounting clip NO.6374 for panels of thickness 0.043" to 0.062" or NO.4909 for thickness 0.030" to 0.042".

Note: Do not put tension on line (rear) terminal of fuse holder.

Features

- In-line, fast-acting circuit protection
- Rejection feature prevents overfusing

Typical applications

- In-line lighting ballast protection

GMQ time-delay, size-rejecting supplemental fuse

Time-delay, size-rejecting in-line fuse. Match fuse and holder amp rating per catalog number table below.



Ratings

- Volts 300 Vac (or less)
- Amps 1/2 to 6-1/4 A
- IR 10 kA

Agency information

- UL Listed, Std. 248-14, (Guide JDYX, File E19180), CSA Certified, (Class 1422-01, File 53787), CE

Catalog no. (amps) and holders

Fuse	Holders ^{1, 2}	Fuse	Holders ^{1, 2}
GMQ-1/2	HLQ-1/2	GMQ-2-1/2	HLQ-3-2/10
GMQ-6/10	HLQ-1-6/10	GMQ-3	HLQ-3-2/10
GMQ-8/10	HLQ-1-6/10	GMQ-3-2/10	HLQ-3-2/10
GMQ-1	HLQ-1-6/10	GMQ-4	HLQ-5
GMQ-1-1/4	HLQ-1-6/10	GMQ-5	HLQ-5
GMQ-1-6/10	HLQ-1-6/10	GMQ-6-1/4	HLQ-8
GMQ-2	HLQ-3-2/10		

1 Carrier is UL Recognized, Guide IZLT2, File E14853 and CSA Certified, Class 6225-01, File 47235 10 A, 300 Vac.

2 Units can be panel-mounted either in a knockout hole with a separate steel clip (BK/A-104) or in a keyhole punch using separate mounting clip NO.6374 for panels of thickness 0.043" to 0.062" or NO.4909 for thickness 0.030" to 0.042".

Note: Do not put tension on line (rear) terminal of fuse holder.

Features

- In-line, fast-acting circuit protection
- Rejection feature prevents overfusing

Typical applications

- In-line lighting ballast protection

HLQ fuse holders for both GLQ and GMQ fuses



GLR fast-acting, non size-rejecting supplemental fuse

Fast-acting, non-rejection, in-line fuse. All fuses use the same HLR or HLR-2A holders.



Ratings

- Volts 300 Vac (or less)
- Amps 3/16-15 A
- IR 10 kA

Agency information

- UL Listed, Std. 248-14, 0-15 A/300 Vac Guide JDYX, File E19180, CSA Certified C22.2, No. 248-14, 0-10 A/300 V Class 1422-01, File 53787, CE

Catalog no. (amps) and holders			
Fuse	Holder ^{1, 2*}	Fuse	Holder ^{1, 2*}
GLR-1/2	HLR	GLR-6	HLR
GLR-1	HLR	GLR-7	HLR
GLR-1-1/2	HLR	GLR-8	HLR
GLR-1-6/10	HLR	GLR-9	HLR
GLR-2	HLR	GLR-10	HLR
GLR-3	HLR	GLR-12	HLR
GLR-4	HLR	GLR-15	HLR-2A
GLR-5	HLR		

1 Carrier is UL Recognized, Guide IZLT2, File E14853 and CSA Certified, Class 6225-01, File 47235 12 A, 300 Vac.

2 Units can be panel-mounted either in a knockout hole with a separate steel clip (BK/A-104) or in a keyhole punch using separate mounting clip NO.6374 for panels of thickness 0.043" to 0.062" or NO.4909 for thickness 0.030" to 0.042".

* For two leads (one each for line and loadside) order HLR-2A, 15 A, 300 V

Note: Do not put tension on line (rear) terminal of fuse holder.

"A" in-line holder

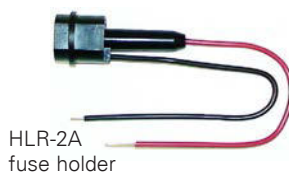
An alternative to the HLR fuse holder is the "A" fuse holder. The A fuse holder comes WITHOUT leads. The customer inserts NO.18 insulated solid copper wire into the lineside receptacle as well as into the load side receptacle. It has the same body dimensions, utilizes the same mounting hole, and takes the same mounting clips as the HLR. The A fuse holder is UL Recognized, 10 A, 300 Vac, Guide IZLT2, File E14853 and CSA Certified, 10 A, 300 Vac, Class 6225-01, File 47235. Order catalog number A.

Features

- In-line, fast-acting circuit protection.

Typical applications

- In-line lighting ballast protection



HLR-2A
fuse holder

GMF/GRF time-delay, non size-rejecting supplemental fuses

Time-delay, non-rejection, in-line fuse. All fuses use the same HLR or HLR-2A holders.



Ratings

- Volts 300 Vac (or less)
- Amps 3/10-10 A
- IR 10 kA

Agency information

- UL Listed, Std. 248-14 0-10 A, Guide JDYX, File E19180, CSA Certified, Class 1422-01, File 53787, CE

Catalog no. (amps) and holders			
Fuse	Holder ^{1, 2*}	Fuse	Holder ^{1, 2*}
GMF-3/10	HLR	GMF-3	HLR
GMF-1/2	HLR	GMF-3-2/10	HLR
GMF-6/10	HLR	GMF-4	HLR
GMF-8/10	HLR	GMF-5	HLR
GMF-1	HLR	GMF-6-1/4	HLR
GMF-1-1/4	HLR	GMF-7	HLR
GMF-1-6/10	HLR	GRF-8	HLR
GMF-2	HLR	GMF-10	HLR
GMF-2-1/2	HLR	GRF-10	HLR
GMF-2-8/10	HLR		

1 Carrier is UL Recognized, Guide IZLT2, File E14853 and CSA Certified, Class 6225-01, File 47235 12 A, 300 Vac.

2 Units can be panel-mounted either in a knockout hole with a separate steel clip (BK/A-104) or in a keyhole punch using separate mounting clip NO.6374 for panels of thickness 0.043" to 0.062" or NO.4909 for thickness 0.030" to 0.042".

* For two leads order HLR-2A, 15 A, 300 V

Note: Do not put tension on line (rear) terminal of fuse holder.

"A" in-line holder

An alternative to the HLR fuse holder is the A fuse holder. The A fuse holder comes WITHOUT leads. The customer inserts NO.18 insulated solid copper wire into the line side receptacle as well as into the load side receptacle. It has the same body dimensions, utilizes the same mounting hole, and takes the same mounting clips as the HLR. The A fuse holder is UL Recognized, 10 A, 300 Vac, Guide IZLT2, File E14853 and CSA Certified, 10 A, 300 Vac, Class 6225-01, File 47235. Order catalog number A.

Features

- In-line, time-delay circuits protection

Typical applications

- In-line lighting ballast protection



HLR
fuse holder

2 — Low voltage supplemental fuses

ATR fast-acting micro blade fuse

Fast-acting, color-coded 2-leg micro blade fuse.

Ratings

- Volts 32 Vdc
- Amps 5-30 A
- IR 1000 A

Agency information

- RoHS compliant



ATM and ATM-LP fast-acting blade fuses

Fast-acting, color-coded blade fuse available in standard and low-profile versions. Standard version available with indication.

Ratings

- Volts 32 Vdc
- Amps 1-30 A
- IR 1000 A

Agency information

- UL Listed, Guide FHXT, File AU 169 (2-30 A non-indicating ATM)



Low-profile



Indicating

Standard

Catalog no. (amps)

Fuse	Color code	Fuse	Color code
ATR-5	Tan	ATR-20	Yellow
ATR-7-1/2	Brown	ATR-25	Clear
ATR-10	Red	ATR-30	Green
ATR-15	Blue		

Features

- Space-savings size
- Industry standard color coding for easy identification of fuse rating

Typical applications

- Automotive

Recommended holder for ATR fuses, see page 2-14.

Catalog no. (amps)

Non-indicating	*Indicating	Low-profile	Color code
ATM-1	—	—	Black
ATM-2	—	ATM-2LP	Gray
ATM-3	ATM-3ID	ATM-3LP	Violet
ATM-4	—	ATM-4LP	Pink
ATM-5	ATM-5ID	ATM-5LP	Tan
ATM-7-1/2	ATM-7-1/2ID	ATM-7-1/2LP	Brown
ATM-10	ATM-10ID	ATM-10LP	Red
ATM-15	ATM-15ID	ATM-15LP	Blue
ATM-20	ATM-20ID	ATM-20LP	Yellow
ATM-25	ATM-25ID	ATM-25LP	Clear
ATM-30	ATM-30ID	ATM-30LP	Green

* Call customer satisfaction for ordering information.

Features

- Industry standard color coding for easy identification of fuse rating
- Indicating versions show blown fuse at a glance, speeds troubleshooting

Typical applications

- Automotive

Recommended blocks and holders for ATM fuses, see page 2-14.

ATC fast-acting blade fuse

Fast-acting, color-coded blade fuse for automotive and control circuit applications.

Ratings

- Volts 32 Vdc
- Amps 1-40 A
- IR 1000 A

Agency information

- UL Recognized, (1-40 A) (Guide JFHR2, File E56412), SAE Standard J1284

Catalog no. (amps)		
Non-indicating	*Indicating	Color code
ATC-1	—	Black
ATC-2	—	Gray
ATC-3	ATC-3ID	Violet
ATC-4	—	Pink
ATC-5	ATC-5ID	Tan
ATC-7-1/2	ATC-7-1/2ID	Brown
ATC-10	ATC-10ID	Red
ATC-15	ATC-15ID	Blue
ATC-20	ATC-20ID	Yellow
ATC-25	ATC-25ID	Clear
ATC-30	ATC-30ID	Green
ATC-35	ATC-35ID	Blue-green
ATC-40	ATC-40ID	Orange

* Call customer satisfaction for ordering information.

Features

- Industry standard color coding for easy identification of fuse rating
- Indicating versions show blown fuse at a glance, speeds troubleshooting

Typical applications

- Automotive
- Low voltage control circuits

Recommended blocks and holders for ATC fuses, see page 2-14.



Standard

Indicating

MAX (MAXI) fast-acting blade fuse

Fast-acting, color-coded, high amp blade fuse. Available with and without indication.

Ratings

- Volts 32 Vdc
- Amps
 - 20-80 A (non-indicating)
 - 20-100 A (indicating)
- IR 1000 A



Standard

Indicating

Catalog no. (amps)		
Non-indicating	*Indicating	Color code
MAX-20	MAX-20ID	Yellow
MAX-25	—	Gray
MAX-30	MAX-30ID	Green
MAX-35	—	Brown
MAX-40	MAX-40ID	Orange
MAX-50	MAX-50ID	Red
MAX-60	MAX-60ID	Blue
MAX-70	MAX-70ID	Tan
MAX-80	MAX-80ID	Clear
—	MAX-100ID	Purple

* Call customer satisfaction for ordering information.

Features

- Color coded housing for easy identification of fuse rating
- Indicating versions show blown fuse at a glance, speeds troubleshooting

Typical applications

- Automotive

Recommended holders for MAX fuses, see page 2-14.

2 — Low voltage supplemental fuses

In-line fuse holders for ATM, ATC and MAX fuses



Typical in-line blade fuse holders with leadwires

In-line fuse holders for ATM, ATC and MAX blade fuses. Versions available with and without covers and with open fuse indication.

Ratings

- Volts 32 Vdc
- Amps 80% continuous of fuse rating. See catalog numbers table for individual holder fuses amp ranges.

Catalog no.	Description	Max amps	Electrical connection
ATR holder			
HH2	Black w/ cover	15	2x4" #16 red leadwire
ATM holders - not for low-profile ATM fuses			
HHL	Black w/ cover	20	2x4" #16 black leadwire
HHM	Black w/ cover	30	2x4" #12 red leadwire
HHU	Black w/ cover	30	2x4" #12 red leadwire
ATM-FHID	Indicating holder, black w/ cover	20	2x4" #16 black leadwire
Low-profile ATM holder			
HHV	Black w/ cover	20	2x4" #12 red leadwire
ATC holders			
HHC	Yellow	20	2x4" #16 black leadwire
HHD	Black	30	2x4" #12 yellow leadwire
HHF	Black w/ cover	20	2x4" #16 yellow leadwire
HHG	Black w/ cover	30	2x4" #12 yellow leadwire
HHR	Black w/ cover	30	2x5" #12 red leadwire
HHS	Blue, self-stripping	20	Accepts #14-18 leadwire
ATC-FHID	Indicating holder, black w/ cover	20	2x6" #16 black leadwire
MAX holders			
HHX	Black w/ cover	60	2x5" #6 red leadwire
MAX-FHID	Indicator, black w/ cover	60	2x5" #6 red leadwire

Fuses must be fully inserted into the holder to provide a solid connection. Poor or improper fuse insertion can result in fuse and holder failure and loss of power and/or circuit protection.

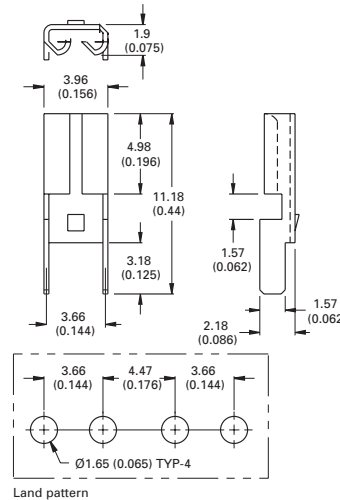
PCB fuseclips for ATM and ATC fuses

ATM fuseclips

Catalog no. 1A5778

- 15 A
- Nickel-plated brass

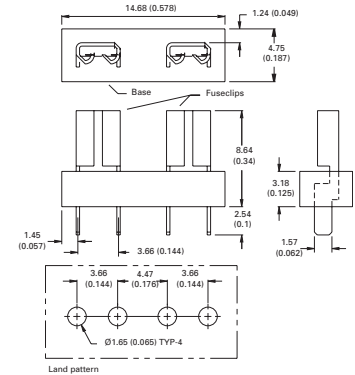
Dimensions — mm (in)



Catalog no. 1A5779

- 15 A
- Nickel-plated brass/glass-filled nylon

Dimensions — mm (in)

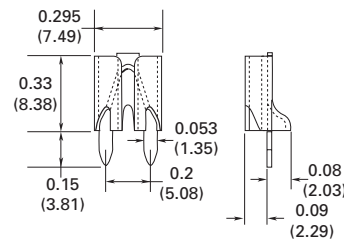


ATC fuseclips

Catalog no. 1A5600

- 20 A
- Tin-plated cartridge brass

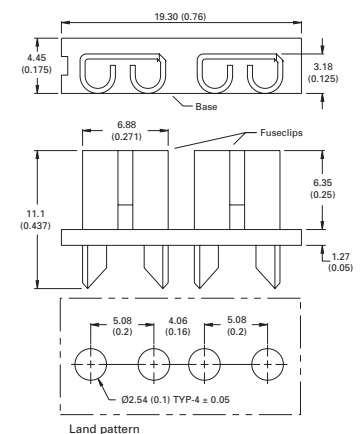
Dimensions — in (mm)



Catalog no. 1A5780

- 15 A
- Nickel-plated brass/glass-filled nylon

Dimensions — mm (in)



Data sheet no. ATM fuses 2128 (HHM, HHL)
ATC fuses 2107 (HHC, HHD, HHF, HHG)
Max fuses 2129 (HHX)

Data sheet no. 2131

Full range of small dimension fast-acting and time-delay fuses



- 5x15 mm
- 5x20 mm IEC
- 5x20 mm UL
- 1/4" x 5/8"
- 1/4" x 7/8"
- 1/4" x 1"
- 1/4" x 1-1/4"

PLUS
PCB fuse holders
and clips

Contents

Description	Section page
Product	Catalog symbol/type
Fuses	
5x15 mm fuses	C515, C519 time-delay
	C518, C520 fast-acting
	C517 fast acting
IEC 5x20 mm fuses	GDB, S500, S500-V fast-acting
	GDA, S501, S501-V fast-acting
	S505, S506SC time-delay
UL 5x20 mm fuses	GDC, S505H, S505H-V, S505SCH, S506 S506-V time-delay
	GMA, GMA-V fast-acting
	GMC, GMC-V time-delay
1/4" x 5/8" fuse	GMD GMD-V time-delay
	AGA fast-acting
	AGW fast-acting
1/4" x 7/8" fuse	AGX fast acting
	AGC, AGC-V, ABC, ABC-V fast-acting
	GBB, GBB-V fast-acting
1/4" x 1" fuse	MDL, MDL-V time-delay
	MDQ, MDQ-V, MDA, MDA-V time-delay
PCB holders and fuseclips	
5x20 mm holders	H15-V, H15-H, HTC-60M
1/4" x 1-1/4" holders	HBH-I, HBH-M, HBV-I, HBV-M, HBW-I, HBW-M
5 mm fuseclips	HTC-15M, HTC-140M, HTC-200M, HTC-210M, 1A3399, 1A5018, 1A5601, 1A5602
1/4" fuseclips	1A1119, 1A1120, 1A1907, 1A3398, 1A4533, 1A4534
	5681, 5682
9/32" fuseclips	5674
13/32" fuseclips	5960 1A3400
9/16" fuseclips	5592

Electronic, PCB, small dimension fuses

For blocks and holders, see the following pages in Section 8

Fuse diameter	Pages
Panel mount blocks	
1/4" fuses	4-5
Through panel holders	
5 mm fuses	41
1/4" fuses	41-42
In-line holders	
5 mm fuses	46
1/4" fuses	46-48

C519 ferrule and C515 axial lead time-delay 5x15 mm glass tube fuses

Ratings

- Volts
 - 125 Vac (3.5-7 A)
 - 250 Vac (125mA-3 A)
 - 32 Vdc (self certified)
- Amps 125mA-7 A
- IR
 - 25 A (350mA @ 600 Vac)
 - 35 A (125mA-1A @ 250 Vac)
 - 100 A (1.25-3 A @ 250 Vac)
 - 400 A (3.5-7 A @ 125 Vac)
 - 10 kA (125mA-3 A @ 125 Vac)



Agency information

- UL Listed, Guide JDYX, File E19180 125mA-250mA and 375mA-3 A, UL Recognized, Guide JDYX2, File E19180, 350mA and 3.5-7 A, CSA Certified, Class 1422-01, File 53787 125mA-250mA and 375mA-3 A, RoHS compliant, CE

Features

- Time-delay for closer sizing on inductive circuits

Typical application

- Electronic circuits
- Printed circuit boards

Catalog no. (amps)			
Ferrule			
C519-125-R	C519-600-R	C519-1.6-R	C519-3.5-R
C519-250-R	C519-750-R	C519-2-R	C519-4-R
C519-350-R	C519-1-R	C519-2.25-R	C519-5-R
C519-375-R	C519-1.25-R	C519-2.5-R	
C519-500-R	C519-1.5-R	C519-3-R	
Axial lead			
C515-125-R	C515-750-R	C515-2-R	C515-5-R
C515-250-R	C515-800-R	C515-2.25-R	C515-6-R
C515-350-R	C515-1-R	C515-2.5-R	C515-7-R
C515-375-R	C515-1.25-R	C515-3-R	
C515-500-R	C515-1.5-R	C515-3.5-R	
C515-600-R	C515-1.6-R	C515-4-R	

C520 ferrule and C518 axial lead fast-acting 5x15 mm glass tube fuses

Ratings

- Volts
 - 250 Vac
 - 32 Vdc (self certified)
- Amps 100mA-5 A
- IR
 - 35 A (100mA-750mA @ 250 Vac)
 - 10 kA (100mA-5 A @ 125 Vac)
 - 100 A (1.5-3.5 A @ 250 Vac)
 - 200 A (4-5 A @ 250 Vac)



Agency information

- UL Recognized, Guide JDYX2, File E19180, CSA Certified, Class 1422-01, File 53787, RoHS compliant, CE

Features

- Small footprint saves space in equipment
- Fast-acting for maximum component protection
- Available in ferrule and axial lead configurations

Typical applications

- Electronic circuits
- Printed circuit boards

Catalog no. (amps)			
Ferrule			
C520-100-R	C520-500-R	C520-2.5-R	C520-5-R
C520-125-R	C520-750-R	C520-3-R	
C520-250-R	C520-1.5-R	C520-3.5-R	
C520-375-R	C520-2-R	C520-4-R	
Axial lead			
C518-100-R	C518-375-R	C518-2-R	C518-3.5-R
C518-125-R	C518-500-R	C518-2.5-R	C518-4-R
C518-250-R	C518-750-R	C518-3-R	C518-5-R

C517 axial lead fast-acting 5x15 mm glass tube fuse

Ratings

- Volts
 - 350 Vac
 - 32 Vdc (self certified)
 - Amps 3 A
 - IR
 - 100 A @ 350 Vac*
 - 100 A @ 250 Vac
 - 10 kA @ 125 Vac
- * 350 Vac/100 A IR is UL Recognized.

Agency information

- UL Listed, Guide JDYX, File E19180, CSA Certified, Class 1422-01, File 53787, UL Recognized, Guide JDYX2, File E19180, RoHS compliant, CE

Features

- Small footprint saves space in equipment
- Fast-acting for maximum component protection
- 350 Vac rating for 277 V ballast circuit protection

Typical applications

- Electronic circuits
- Printed circuit boards
- Electronic ballast protection

To order, use catalog number **C517-3-R**



S500 ferrule (GDB†) and S500-V axial lead fast-acting, low breaking capacity 5x20 mm glass tube fuses

Ratings

- Volts
 - 250 Vac (or less)
 - 32 Vdc (self certified)
- Amps 32mA-10 A
- IR
 - 35 A (32mA-3.15 A)
 - 40 A (4 A)
 - 63 A (6.3 A)
 - 80 A (8 A)
 - 100 A (10 A)

Agency information

- cURus, SEMKO, VDE, BSI, IMQ, CCC, RoHS compliant, CE
- Agency information not applicable to all ratings; see data sheet for details.

Features

- Fast-acting for maximum protection, conforms to IEC 60127-2 (160mA-10 A)

Typical applications

- Electronic circuits



Electronic, PCB, small dimension fuses

Catalog no. (amps)*			
S500-32-R	S500-160-R	S500-800-R	S500-4-R
S500-40-R	S500-200-R	S500-1-R	S500-5-R
S500-50-R	S500-250-R	S500-1.25-R	S500-6.3-R
S500-63-R	S500-315-R	S500-1.6-R	S500-8-R
S500-80-R	S500-400-R	S500-2-R	S500-10-R
S500-100-R	S500-500-R	S500-2.5-R	
S500-125-R	S500-630-R	S500-3.15-R	

* GDB is not available with axial leads. To order axial leads, place "V" in the S500 catalog number. E.g., S500-**V**-32-R.

† When ordering GDB versions, do not add "-R" suffix to catalog number.

S501 ferrule (GDA[†]) and S501-V Axial lead fast-acting high breaking capacity 5x20 mm ceramic tube fuses

Ratings

- Volts
 - 250 Vac (or less)
 - 32 Vdc (self certified)
- Amps 50mA-10 A**
- IR 1500 A @ 250 Vac

Agency information

- cURus, SEMKO, VDE, IMQ, CCC, CSA, BSI, MITI/JET, RoHS compliant, CE
- Agency information not applicable to all ratings, see data sheet for details.

Features

- Fast-acting for maximum protection
- High break capacity for use in higher fault energy electronic circuitry
- Conforms to IEC standards

Typical applications

- Electronic circuits

Catalog no. (amps)*			
S501-50-R	S501-200-R	S501-800-R	S501-3.15-R
S501-63-R	S501-250-R	S501-1-R	S501-4-R
S501-80-R	S501-315-R	S501-1.25-R	S501-5-R
S501-100-R	S501-400-R	S501-1.6-R	S501-6.3-R
S501-125-R	S501-500-R	S501-2-R	S501-8-R
S501-160-R	S501-630-R	S501-2.5-R	S501-10-R

* GDA is not available with axial leads. To order axial leads, place "V" in the S501 catalog number. E.g., S501-V-125-R.

† When ordering GDA version, do not add "-R" suffix to catalog number, GDA is not available above 6.3 A.



S505 ferrule, and S505SC axial lead time-delay, high-breaking capacity 5x20 mm ceramic tube fuses

Ratings

- Volts
 - 250 Vac (or less)
 - 32 Vdc (self certified)
- Amps 500mA-12 A
- IR 1500 A @ 250 Vac

Agency information

- cURus, CSA, IMQ, VDE, SEMKO, CCC/CQC, PSE/JET, KC, BS, RoHS compliant
- Agency information not applicable to all ratings, see data sheet for details.

Features

- Time-delay performance ideal for inductive circuits.
- Conforms to IEC standards.

Typical applications

- Electronic circuits

Catalog no. (amps)*			
S505-500-R**	S505-1.6-R	S505-4-R	S505-10-R
S505-800-R**	S505-2-R	S505-5-R	S505-12-R**
S505-1-R	S505-2.5-R	S505-6.3-R	
S505-1.25-R	S505-3.15-R	S505-8-R	

* To order axial leads, place "SC" in catalog number. E.g., S505SC-2-R.

** Axial leads not available.



S505H ferrule, and S505H-V and S505SCH axial time-delay high breaking capacity 5x20 mm ceramic tube fuses

Ratings

- Volts
 - 600 Vac/400 Vdc (S505H 500mA-5 A)
 - 500 Vac/400 Vdc (S505H 6.3-10 A)
 - 250 Vac (S505SCH)
- Amps
 - 500mA-10 A (S505H)
 - 3.15-6.3 A (S505SCH)
- IR @ 250 Vac
 - 35 A (S505H)
 - 1.5 kA (S505SCH / 50 Hz / 250 Vac / 400 Vdc)
 - 100 A max AC

Agency information

- cURus, CCC, CQC, TUV, PSE/JET (S505H)
- cURus, KC, CQC, TUV (S505SCH)
- RoHS compliant
- Agency information not applicable to all ratings; see data sheets for details.

Features

- Time-delay, high breaking capacity
- Conforms to IEC standards

Typical applications

- Power supplies/adapters
- Desktops/notebooks

Catalog no. (amps)

S505H*

S505H-500-R	S505H-1.6-R	S505H-4-R	S505H-10-R
S505H-800-R	S505H-2-R	S505H-5-R	
S505H-1-R	S505H-2.5-R	S505H-6.3-R	
S505H-1.25-R	S505H-3.15-R	S505H-8-R	

S505SCH (axial lead only)

S505SCH-3.15-R	S505SCH-5-R	S505SCH-6.3-R
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* To order an axial lead S505H fuse, place "V" in catalog number. E.g., S505H-V-5-R.



S506 ferrule (GDC†) and S506-V axial lead time-delay low breaking capacity 5x20 mm glass tube fuses

Ratings

- Volts
 - 250 Vac (or less)
 - 32 Vdc (self certified)
- Amps 32mA-15 A**
- IR 35 A @ 250 Vac

Agency information

- UR, CSA, cURus, SEMKO, VDE, BSI, IMQ, VDE, PSE/JET, CCC, RoHS compliant
- Agency information not applicable to all ratings; see data sheet for details.

Features

- Time-delay for inductive circuits
- Conforms to IEC standards

Typical applications

- Electronic circuits

Catalog no. (amps)*

S506-32-R	S506-160-R	S506-800-R	S506-4-R
S506-40-R	S506-200-R	S506-1-R	S506-5-R
S506-50-R	S506-250-R	S506-1.25-R	S506-6.3-R
S506-63-R	S506-315-R	S506-1.6-R	S506-8-R
S506-80-R	S506-400-R	S506-2-R	S506-10-R
S506-100-R	S506-500-R	S506-2.5-R	S506-12.5-R
S506-125-R	S506-630-R	S506-3.15-R	S506-15-R

* GDC is not available with axial leads. To order axial leads, place "V" in the S506 catalog number. E.g., S506-V-15-R.

† When ordering GDC version, do not add "-R" suffix to catalog number., GDC fuses are not available above 6.3 A.



GMA ferrule and GMA-V axial leads fast-acting 5x20 mm glass tube fuses

Ratings

- Volts
 - 250 Vac (63mA-3 A)
 - 125 Vac (3.15-15 A)
 - 32 Vdc (self certified)
- Amps 63mA-15 A
- IR
 - 35 A (63mA-1 A @ 250 Vac, p.f. = 0.7-0.8)
 - 10 kA (63mA-6 A @ 125 Vac, p.f. = 0.7-0.8)
 - 100 A (1.25-2.5 A @ 250 Vac, p.f. = 0.7-0.8)
 - 200 A (7-8 A @ 125 Vac, p.f. = 1.0)
 - 150 A (10-15 A @ 125 Vac, p.f. = 1.0)



Agency information

- UL Listed, Std. 248-14 Guide JDYX, File E19180 up to 6 A, UL Recognized, Guide JDYX2, File E19180, 7-15 A, CSA Certified, Class 1422-01, File 53787 up to 6 A, PSE Approval 1-15 A, RoHS compliant, CE

Features

- Fast-acting for maximum protection

Typical applications

- Electronic circuits

Catalog no. (amps)*

GMA-63-R	GMA-600-R	GMA-2-R	GMA-7-R
GMA-100-R	GMA-750-R	GMA-2.5-R	GMA-8-R
GMA-125-R	GMA-800-R	GMA-3.15-R	GMA-10-R
GMA-200-R	GMA-1-R	GMA-3.5-R	GMA-15-R
GMA-250-R	GMA-1.25-R	GMA-4-R	
GMA-300-R	GMA-1.5-R	GMA-5-R	
GMA-500-R	GMA-1.6-R	GMA-6-R	

* To order axial leads, place "V" in catalog number. E.g., GMA-V-8-R.

GMC ferrule and GMC-V axial lead medium time-delay 5x20 mm glass tube fuses

Ratings

- Volts
 - 250 Vac (63mA-3.15 A)
 - 125 Vac (3.5-10 A)
 - 32 Vdc (self certified)
- Amps 63mA-10 A
- IR
 - 35 A (63mA-1 A @ 250 Vac, p.f. = 0.7-0.8)
 - 10 kA (63mA-6 A @ 125 Vac, p.f. = 0.7-0.8)
 - 100 A (1.25-3.15 A @ 250 Vac, p.f. = 0.7-0.8)
 - 200 A (6.3-10 A @ 125 Vac, p.f. = 1.0)



Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180 up to 6.3 A, UL Recognized, Guide JDYX2, File E19180 7-10 A, CSA Certified, Class 1422-01, File 53787 up to 6.3 A, MITI Approval, 1-10 A, KC, RoHS compliant, CE
- KC not applicable to all ratings; see data sheet for details

Features

- Conforms to UL standards

Typical applications

- Electronic circuits

Catalog no. (amps)*

GMC-63-R	GMC-315-R	GMC-1.25-R	GMC-5-R
GMC-80-R	GMC-400-R	GMC-1.5-R	GMC-6-R
GMC-100-R	GMC-500-R	GMC-1.6-R	GMC-6.3-R
GMC-125-R	GMC-600-R	GMC-2-R	GMC-7-R
GMC-150-R	GMC-630-R	GMC-2.5-R	GMC-8-R
GMC-200-R	GMC-750-R	GMC-3.15-R	GMC-10-R
GMC-250-R	GMC-800-R	GMC-3.5-R	
GMC-300-R	GMC-1-R	GMC-4-R	

* To order axial leads, place "V" in catalog number. E.g., GMC-V-5-R.

GMD ferrule and GMD-V axial leads time-delay 5x20 mm glass tube fuses

Ratings

- Volts
 - 250 Vac
 - 32 Vdc (self certified)
- Amps 125mA-4 A
- IR
 - 10 kA (125mA-3 A @ 125 Vac, p.f. = 0.7-0.8)
 - 10 kA (4 A @ 125 Vac, p.f. = 1.0)
 - 35 A (125mA-1 A @ 250 Vac, p.f. = 0.7-0.8)
 - 100 A (1.2-3. A @ 250 Vac, p.f. = 0.7-0.8)
 - 200 A (4 A @ 250 Vac, p.f. = 1.0)

Agency information

- UL Listed Guide JDYX, File E19180, UL Recognized Card (4 A), Guide JDYX2, File E19180, 4 A, CSA Certified, Class 1422-01, File 53787, PSE/JET, File 1641-31003-1001, RoHS complaint, CE
- Agency information not applicable to all ratings; see data sheet for details

Features

- Time-delay for inductive circuits
- Conforms to UL standards

Typical applications

- Electronic circuits

Catalog no. (amps)*

GMD-125-R	GMD-375-R	GMD-800-R	GMD-2-R
GMD-150-R	GMD-400-R	GMD-1-R	GMD-2.5-R
GMD-200-R	GMD-500-R	GMD-1.2-R	GMD-3-R
GMD-250-R	GMD-600-R	GMD-1.25-R	GMD-4-R
GMD-300-R	GMD-630-R	GMD-1.5-R	
GMD-315-R	GMD-750-R	GMD-1.6-R	

* To order axial leads, place "V" in catalog number. E.g., GMD-V-2.5-R.



AGA fast-acting 1/4" x 5/8" glass tube fuse

Ratings

- Volts
 - 125 Vac (or less)
 - 32 Vdc (self certified)
- Amps 1-30 A
- IR
 - 10 kA (1 to 1-1/2 A @ 125 Vac)
 - 200 A (2-5 A @ 125 Vac)
 - 1000 A (6-30 A @ 32 Vac)

Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180 up to 3-1/2 A UL Recognized, Guide JDYX2 12-30 A, CE

Features

- Fast-acting for maximum protection
- Size rejects insertion of other fuse types

Typical applications

- Electronic circuits

Catalog no. (amps)

AGA-1	AGA-3	AGA-7-1/2	AGA-25
AGA-1-1/2	AGA-5	AGA-10	AGA-30
AGA-2	AGA-6	AGA-15	
AGA-2-1/2	AGA-7	AGA-20	



AGW fast-acting 1/4" x 7/8" glass tube fuse

Ratings

- Volts
 - 32 Vac
 - 32 Vdc (self certified)
- Amps 1-30 A
- IR 1 kA AC



Features

- Fast-acting for maximum protection

Typical applications

- Electronic circuits

Catalog no. (amps)

AGW-1	AGW-3	AGW-7-1/2	AGW-25
AGW-1-1/2	AGW-4	AGW-10	AGW-30
AGW-2	AGW-5	AGW-15	
AGW-2-1/2	AGW-6	AGW-20	

AGX fast-acting 1/4" x 1" glass tube fuse

Ratings

- Volts
 - 250 Vac (1/4-20 A)
 - 125 Vac (25-30 A)
 - 32 Vdc (1/4-30 A)
- Amps 1/4-30 A
- IR
 - 35 A (1/4-1 A @ 250 Vac)
 - 10 kA (1/4-10 A @ 125 Vac)
 - 200 A (15-20 A @ 125 Vac)
 - 100 A (25-30 A @ 125 Vac)
 - 1000 A (8-30 A @ 32 Vac)



Agency information

- cULus up to 10 A, Guide JDYX, File E 19180 and Guide JDYX7, File E19180, UL Recognized Card 15-30 A Guide JDYX2, File E19180, CSA Component Acceptance Card 15-30 A Class No. 1422-01, File 53787, RoHS compliant

Features

- Size rejects insertion of other fuse types

Typical applications

- Electronic circuits

Catalog no. (amps)

AGX-1/4	AGX-1	AGX-4	AGX-15
AGX-3/10	AGX-1-1/4	AGX-5	AGX-20
AGX-3/8	AGX-1-1/2	AGX-6	AGX-25
AGX-4/10	AGX-2	AGX-7	AGX-30
AGX-1/2	AGX-2-1/2	AGX-8	
AGX-3/4	AGX-3	AGX-10	

AGC ferrule and AGC-V axial lead fast-acting 1/4" x 1-1/4" glass tube fuses

Ratings

- Volts
 - 250 Vac (1/20-10 A)
 - 32 Vac (12-40 A)
 - 32 Vdc (self certified)
- Amps 1/20-40 A
- IR
 - 35 A (1/20-1 A @ 250 Vac)
 - 100 A (11/4-3 A @ 250 Vac)
 - 200 A (4-10 A @ 250 Vac)
 - 10 kA (1/20-10 A @ 125 Vac)
 - 1000 A (12-40 A @ 32 Vac)



Agency information

- UL Listed, Guide JDYX, File E19180, up to 10 A, UL Recognized, Guide JDYX2, File E19180, 12-30 A, CSA Certified, Class 1422-01, CSA Component Acceptance Card, Class No. 1422-30, RoHS compliant, CE

Features

- Original electronic glass tube fuse
- Fast-acting for maximum protection
- Wide amp/volt ratings allow versatility of protecting electronic circuits

Typical applications

- Electronic circuits

Catalog no. (amps)*

AGC-1/20-R	AGC-3/4-R	AGC-5-R	AGC-15-R
AGC-1/10-R	AGC-1-R	AGC-6-R	AGC-20-R
AGC-1/8-R	AGC-1-1/4-R	AGC-7-R	AGC-25-R
AGC-3/16-R	AGC-1-1/2-R	AGC-7-1/2-R	AGC-30-R
AGC-2/10-R	AGC-2-R	AGC-8-R	AGC-35-R
AGC-1/4-R	AGC-2-1/4-R	AGC-9-R	AGC-40-R
AGC-3/10-R	AGC-2-1/2-R	AGC-10-R	
AGC-3/8-R	AGC-3-R	AGC-12-R	
AGC-1/2-R	AGC-4-R	AGC-14-R	

* To order axial leads, place "V" in catalog number. E.g., AGC-V-1/10-R.

ABC ferrule and ABC-V axial leads fast-acting 1/4" x 1-1/4" ceramic tube fuse

Ratings

- Volts
 - 250 Vac/125 Vdc (1/4-15 A, 20-30 A)*
 - 250 Vac (18 A)
 - 32 Vdc (self certified)
- Amps 1/4-30 A
- IR**
 - 35 A (1/4-1 A @ 250 Vac)
 - 100 A (11/2-3 A @ 250 Vac)
 - 200 A (4-10 A @ 250 Vac)
 - 750 A (12-15 A @ 250 Vac)
 - 400 A (18-20 A @ 250 Vac)
 - 10 kA (1/4-15 A @ 125 Vac)
 - 1 kA (18-30 A @ 125 Vac)
 - 10 kA (1/4-15, 20 A @ 125 Vdc)
 - 400 A (25-30 A @ 125 Vdc)
 - 200 A (25-30 A @ 250 Vac)



* CSA approvals for 25 A and 30 A are at 125 Vac – IR 1000 A and Vdc – IR 400 A (IR 1000 A at 75 Vdc)

** Interrupting ratings measured at 70% – 80% power factor on AC. The interrupting ratings for 18 A and 20 A were measured at 85%-95% power factor on AC. The interrupting ratings for 25 A and 30 A were measured at 89% power factor on AC.

Agency information

- UL Listed, Std. 248-14, Guide JDYX File E19180 up to 15 A; UL Recognized, Guide JDYX2, File E19180, 18-30 A; CSA Certified, Class 1422-01 and 1422-30, File 53787, RoHS compliant, CE

Features

- Ceramic body allows for higher amp/volt rating combinations

Typical applications

- Electronic circuits

Catalog no. (amps)

ABC-1/4-R	ABC-2-R	ABC-6-R	ABC-15-R
ABC-1/2-R	ABC-2-1/2-R	ABC-7-R	ABC-18-R
ABC-3/4-R	ABC-3-R	ABC-8-R	ABC-20-R
ABC-1-R	ABC-4-R	ABC-10-R	ABC-25-R
ABC-1-1/2-R	ABC-5-R	ABC-12-R	ABC-30-R

* To order axial leads, place "V" in catalog number. E.g., ABC-V-7-R.

GBB ferrule and GBB-V axial lead very-fast-acting 1/4" x 1-1/4" ceramic tube fuses

Ratings

- Volts 250 Vac/125 Vdc
- Amps 1-30 A
- IR
 - 200 A @ 250 Vac
 - 200 A (20-30 A @ 125 Vac/dc)
 - 10 kA (1-15 A @ 125 Vac/dc)

Agency information

- UL Recognized, Std. 248-14, Guide JFHR2, File E56412, CSA Component Acceptance Class 1422-30, File 53787, RoHS complaint, CE

Features

- Very fast-acting performance allows protection of highly sensitive electronic circuitry

Typical applications

- Electronic circuits

Catalog no. (amps)*

GBB-1-R	GBB-4-R	GBB-8-R	GBB-15-R
GBB-1-1/4-R	GBB-5-R	GBB-9-R	GBB-20-R
GBB-2-R	GBB-6-R	GBB-10-R	GBB-25-R
GBB-3-R	GBB-7-R	GBB-12-R	GBB-30-R

* To order axial leads, place "V" in catalog number. E.g., GBB-V-10-R.

MDL ferrule and MDL-V axial lead time-delay 1/4" x 1-1/4" glass tube fuses

Ratings

- Volts
 - 250 Vac (1/16-8 A)
 - 32 Vac (9-30 A)
 - 32 Vdc (self certified)
- Amps 1/16-30 A
- IR*
 - 35 A (1/16-1 A @ 250 Vac)
 - 100 A (11/4-3 A @ 250 Vac)
 - 200 A (4-8 A @ 250 Vac)
 - 10000 A (1/16-8 A @ 125 Vac)
 - 1000 A (9-30 A @ 32 Vac)

* Interrupting ratings were measured at 70% – 80% power factor on AC, and at a time constant described in UL 198L.

Agency information

- UL Listed, Guide JDYX, File E19180 up to 8 A; CSA Certified Class 1422-01 up to 8 A; UL Recognized, Guide JDYX2, File E19180, 9-30 A; CSA Component Acceptance, Class 1422-30, 9-30 A, RoHS compliant, CE

Features

- Time-delay allows close sizing on inductive circuits

Typical applications

- Electronic circuits

Catalog no. (amps)*

MDL-1/16-R	MDL-1/2-R	MDL-3-R	MDL-10-R
MDL-1/10-R	MDL-3/4-R	MDL-3-2/10-R	MDL-12-R
MDL-1/8-R	MDL-1-R	MDL-4-R	MDL-15-R
MDL-2/10-R	MDL-1-1/4-R	MDL-5-R	MDL-20-R
MDL-3/16-R	MDL-1-1/2-R	MDL-6-R	MDL-25**
MDL-1/4-R	MDL-2-R	MDL-7-R	MDL-30**
MDL-3/10-R	MDL-2-1/4-R	MDL-8-R	
MDL-3/8-R	MDL-2-1/2-R	MDL-9-R	

* To order axial leads, place "V" in catalog number. E.g., MDL-V-3-R.

**RoHS compliant construction not available.

MDQ ferrule and MDQ-V axial lead dual-element, time-delay 1/4" x 1-1/4" glass tube fuses

Ratings

- Volts
 - 250 Vac (1/100-7 A)
 - 32 Vac (7-1/2 to 15 A)
 - 32 Vdc (self certified)
- Amps 1/100-15 A
- IR
 - 35 A (1/100-1 A @ 250 Vac)
 - 100 A (1-1/4 to 3 A @ 250 Vac)
 - 200 A (4-7 A @ 250 Vac)
 - 1000 A (7-1/2 to 12 A @ 32 Vac)



Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180 1/16-7 A, CSA Component Acceptance, Class 1422-01, File 47233 1/16 -15 A, UL Recognized, Guide JDYX2, File E19180, 7-1/2-15 A.

Features

- Dual-element design allows closer sizing to inductive circuits than any other fuses

Typical applications

- Electronic relay and control circuits

Catalog no. (amps)*

MDQ-1/100	MDQ-3/10	MDQ-1-1/2	MDQ-5
MDQ-1/32	MDQ-3/8	MDQ-1-6/10	MDQ-6
MDQ-1/16	MDQ-4/10	MDQ-1-8/10	MDQ-6-1/4
MDQ-1/10	MDQ-1/2	MDQ-2	MDQ-7
MDQ-1/8	MDQ-6/10	MDQ-2-1/4	MDQ-7-1/2
MDQ-15/100	MDQ-3/4	MDQ-2-1/2	MDQ-8
MDQ-175/1000	MDQ-8/10	MDQ-2-8/10	MDQ-9
MDQ-3/16	MDQ-1	MDQ-3	MDQ-10
MDQ-2/10	MDQ-1-2/10	MDQ-3-2/10	MDQ-12
MDQ-1/4	MDQ-1-1/4	MDQ-4	MDQ-15

* To order axial leads, place "V" in catalog number. E.g., MDQ-V-1-1/4.

MDA ferrule and MDA-V axial lead time-delay 1/4" x 1-1/4" ceramic tube fuses

Ratings

- Volts
 - 250 Vac (or less)
 - 125 Vdc (20-30 A)
 - 32 Vdc (self certified)
- Amps 1/4-30 A
- IR**
 - 35 A (1/4 to 1 A @ 250 Vac)
 - 100 A (1-1/2 to 2 A @ 250 Vac)
 - 200 A (2-1/2 to 10 A @ 250 Vac)
 - 750 A (12-15 A @ 250 Vac)
 - 1500 A (20-30 A @ 250 Vac)
 - 10 kA (1/4-30 A @ 125 Vac)
 - 10 kA (20-30 A @ 125 Vdc)



**Interrupting ratings were measured at 70% – 80% power factor on AC, and at a time constant described in UL 248.

Agency information

- UL Listed, Std. 248-14, Guide JDYX, File E19180 up to 20 A, CSA Certified, Class 1422-01, File 53787 up to 20 A. UL Recognized, Guide JDYX2, File E19180, 25-30 A, CSA Component Acceptance, Class 1422-30, 25-30 A, RoHS compliant, CE

Features

- Ceramic body for higher amp/volt ratings
- Inventory consolidation by replacing MDL fuses allows for reduced SKU investment and minimizing potential for misapplying fuse

Typical applications

- Electronic circuits

Catalog no. (amps)*

MDA-1/4-R	MDA-2-R	MDA-6-R	MDA-15-R
MDA-1/2-R	MDA-2-1/2-R	MDA-7-R	MDA-20-R
MDA-3/4-R	MDA-3-R	MDA-8-R	MDA-25 A-R
MDA-1-R	MDA-4-R	MDA-10-R	MDA-30 A-R
MDA-1-1/2-R	MDA-5-R	MDA-12-R	

* To order axial leads, place "V" in catalog number. E.g., MDA-V-1-1/2-R.

3 — Electronic, PCB and small dimension fuses

H15-V vertical mount 5 mm fuse holder with threaded cap



RoHS
2011/65/EU

Ratings

- Volts 250 Vac
- Amps 10 A (cURus and VDE)
- Temperature rise 41°C

Agency information

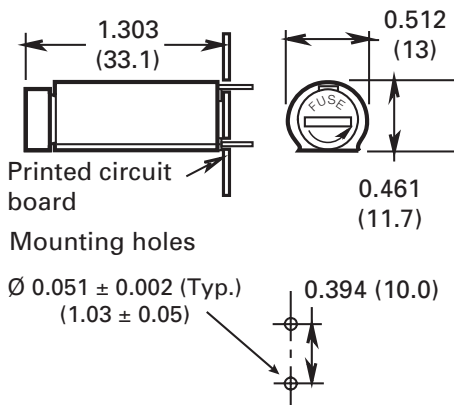
- cURus Recognized, Guide IZLT2/IZLT8, File E14853
- VDE File 40039714

Materials

- Tin-plated clip
- Tin-plated copper terminals
- Thermoplastic body (UL 94V0, glow wire test: 960°C per IEC 695-2-1)

Catalog no.	Carton qty.
BK-H15-V-1	200
BK1-H15-V-1	1000
BK-H15-V-1-B	100 holder body only
BK-H15-V-1-K	100 holder cap only

Dimensions - in (mm)



H15-H horizontal mount 5 mm fuse holder with threaded cap



RoHS
2011/65/EU

Ratings

- Volts 250 Vac
- Amps 10 A (cURus) 6.3 A (VDE)
- Temperature rise 41°C

Agency information

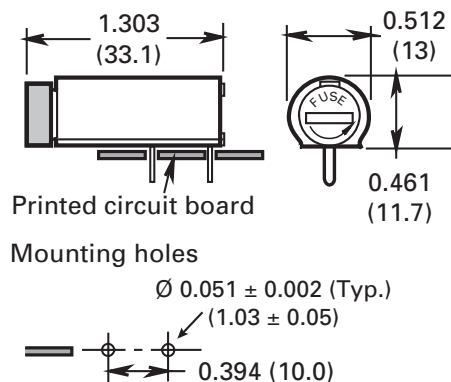
- cURus Recognized, Guide IZLT2/IZLT8, File E14853
- VDE File 40039714

Materials

- Tin-plated clip
- Tin-plated copper terminals
- Thermoplastic body (UL 94V0, glow wire test: 960°C per IEC 695-2-1)

Catalog no.	Carton qty.
BK-H15-H-1	200
BK1-H15-H-1	1000
BK-H15-H-1-B	100 holder body only
BK-H15-H-1-K	100 holder cap only

Dimensions - in (mm)



HTC-60M four-leg stand-off mount 5 mm fuse holder



RoHS
2011/65/EU

Ratings

- Volts 250 Vac
- Amps 6.3 (cURus and VDE)

Agency information

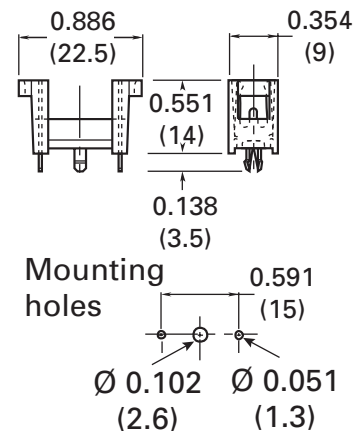
- cURus Recognized, Guide IZLT2/IZLT8, File E14853
- VDE File 4004459

Materials

- Tin-plated brass terminals

Catalog no.	Qty.
HTC-60M	10
BK-HTC-60M	100 (bulk)

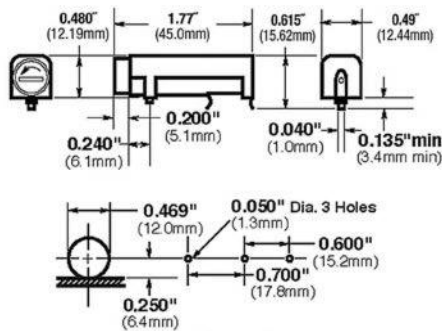
Dimensions - in (mm)



HBH-I (1/4" x 1-1/4") and HBH-M (5x20 mm) horizontal mount fuse holders



Dimensions - in (mm)



Ratings

- UL 16 A/250 V
- CSA 12 A/250 V
- VDE 6.3 A/250 V
- SEMKO 10 A/250 V

Agency information

- UL Recognized, Guide IZLT2, File EI4853, CSA Certified, Class 6225-01, File 47235, VDE 4009241 (HBV, HBW), SEMKO 800444, CE

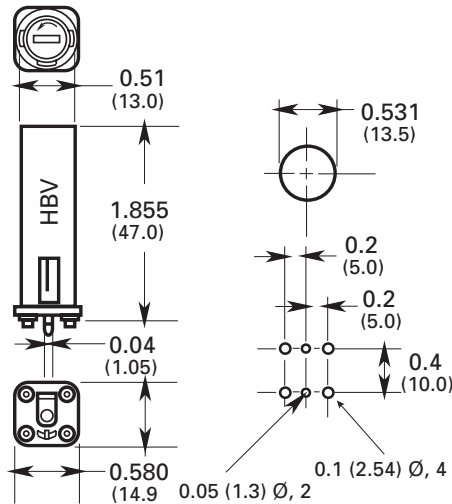
Electrical

- Insulation resistance 10 MΩ 500 Vdc
- Contact resistance less than 0.005 Ω @ 200mV
- Dielectric strength over 200 V/mil

HBV-I (1/4" x 1-1/4") and HBV-M (5x20 mm) vertical mount fuse holders with stability pins



Dimensions - in (mm)



Material

- High dielectric molded phenolic with a UL 94V0 flammability rating
- Fuse carrier and knob: spring-loaded, bayonet-type, tin-plated brass with screwdriver slot

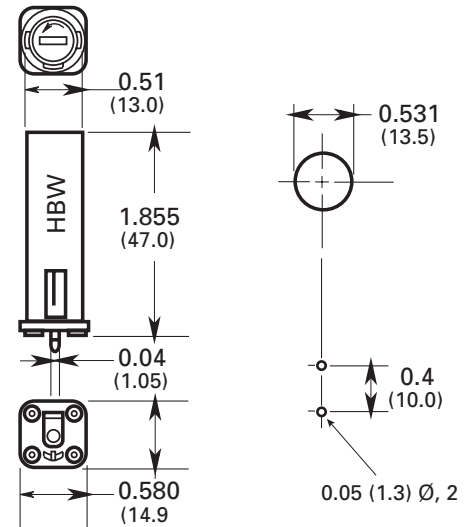
Mounting

- "Kicked" terminals (all) and stability pins on HBV and HBW
- Temperature rating (RTI): body 150°C, knob 130°C

HBW-I (1/4" x 1-1/4") and HBW-M (5x20 mm) vertical mount fuse holder without stability pins



Dimensions - in (mm)



Replacement fuse caps

FBI and FBM fuse caps fit PCB fuse holders HBH-, HBV-, and HBW-.

To order, specify Catalog numbers:

- FBI for 1/4" diameter fuses
- FBM for 5 mm diameter fuses



FBI



FBM

Electronic, PCB, small
dimension fuses

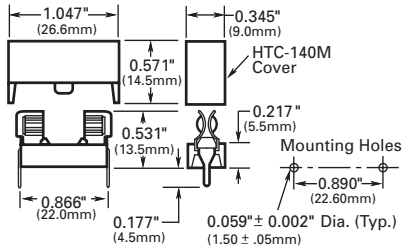
HTC-15M, HTC-140M 5 mm fuse holder and snap-on cover

Ratings

- 250 V / 6.3 A / 1.6 W

Agency information

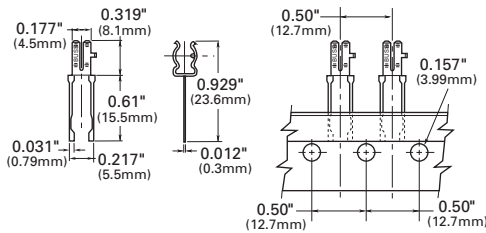
- cURus, Guide 1ZLT2 and 1ZLT8, File E14853
- VDE 40004458
- RoHS compliant



Catalog no.	Description
HTC-15M	Holder only
HTC-140M	Holder with natural color cover
HTC-150M*	Holder with transparent cover

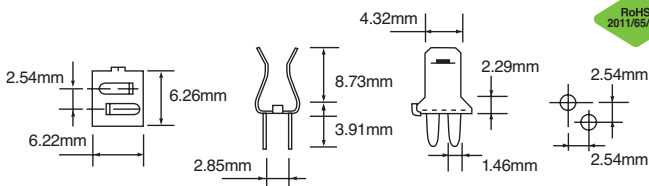
* Available in bulk only, order BK/HTC-150M.

HTC-200M 5 mm fuseclip



Catalog no.	Material	Description
HTC-200M	Tin-plated bronze	Tape and fan fold pack
AP/HTC-200M		Ammo pack 1000 pieces per box

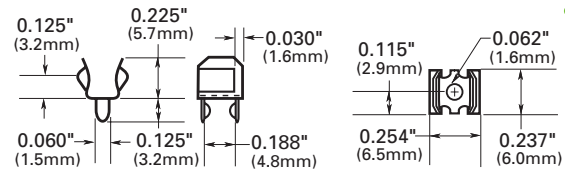
HTC-210M 5 mm fuseclip with end stops



Catalog no.	Material	Description
HTC-210M	Tin-plated bronze	Tape and fan fold pack
AP/HTC-210M		Ammo pack 1000 pieces per box

Data sheet no. 2110

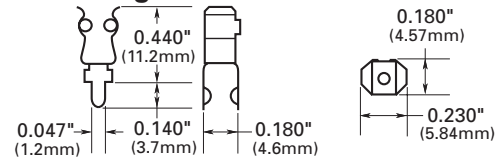
1A3399 low profile 5 mm fuseclips with end stops and straight leads



Catalog no.	Material*	Finish
1A3399-01	BeCu	Silver
1A3399-04-R	BeCu	Bright tin
1A3399-10-R	Copper alloy	Bright tin

* BeCu recommended for more than 15 A.

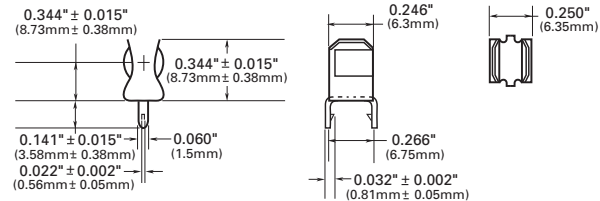
1A5018 high profile 5 mm fuseclips with end stops and straight leads



Catalog no.	Material*	Finish
1A5018-07	Copper alloy	Silver
1A5018-10-R	Copper alloy	Bright tin

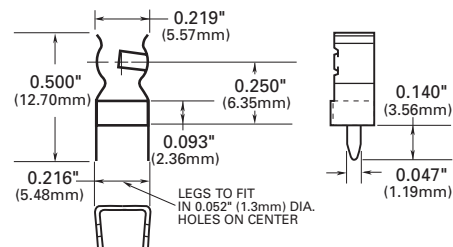
* BeCu 1A3399 fuseclips recommended for more than 15 A.

1A5601 5 mm fuseclip (≤ 7 A)



Catalog no.	Material	Finish
1A5601	Cartridge brass	Bright tin

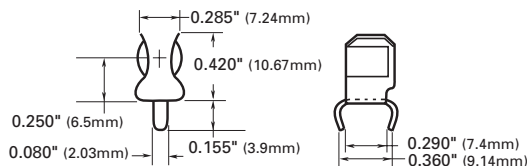
1A5602 fuseclip with end stops (≤ 7 A)



Catalog no.	Material	Finish
1A5602	Cartridge brass	Bright tin

Data sheet no. 2131

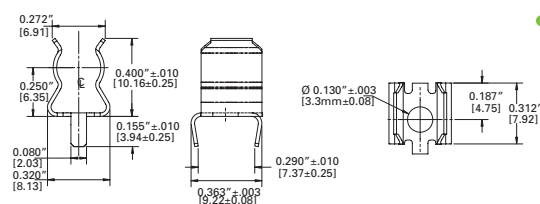
1A1119 1/4" fuseclips with end stops and angled-in leads


RoHS
2011/65/EU

Catalog no.	Material*	Finish
1A1119-04-R	High performance copper	Bright tin
1A1119-05	High performance copper	Silver
1A1119-10-R	Cartridge brass	Bright tin

* High performance copper recommended for more than 15 A.

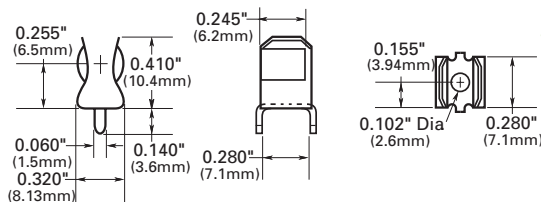
1A1120 1/4" fuseclips without end stops or angled-in leads


RoHS
2011/65/EU

Catalog no.	Material*	Finish
1A1120-02	Cartridge brass	None/bright dipped
1A1120-05	High performance copper	Silver
1A1120-06-R	High performance copper	Bright tin
1A1120-09-R	Cartridge brass	Bright tin

* High performance copper recommended for more than 15 A.

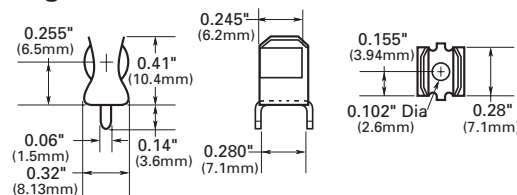
1A1907 1/4" fuseclips with end stops and straight leads


RoHS
2011/65/EU

Catalog no.	Material*	Finish
1A1907-02	Cartridge brass	None/bright dipped
1A1907-03-R	High performance copper	Bright tin
1A1907-05	High performance copper	Silver
1A1907-06-R	Cartridge brass	Bright tin

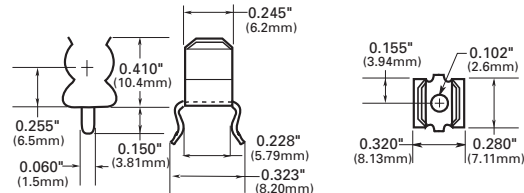
* High performance copper recommended for more than 15 A.

1A3398 PCB 1/4" fuseclips without end stops with straight leads


RoHS
2011/65/EU

Catalog no.	Material	Finish
1A3398-07-R	Cartridge brass	Bright tin

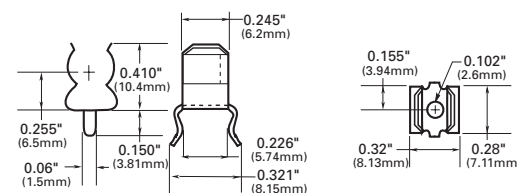
1A4533 1/4" fuseclips without end stops or angled out leads


RoHS
2011/65/EU

Catalog no.	Material*	Finish
1A4533-01-R	High performance copper	Bright tin
1A4533-06-R	Cartridge brass	Bright tin

* High performance copper recommended for more than 15 A.

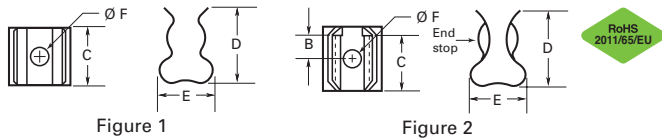
1A4534 1/4" fuseclips with end stops and angled out leads


RoHS
2011/65/EU

Catalog no.	Material*	Finish
1A4534-01-R	High performance copper	Bright tin
1A4534-06-R	Cartridge brass	Bright tin

* High performance copper recommended for more than 15 A.

5681 and 5682 1/4" fuseclips with mounting holes

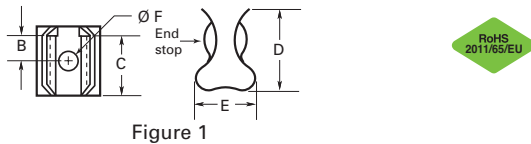


Catalog no.	Clip mat.	Finish	Dimensions - in					
			B	C	D	E	Ø F	Ref.
Without end stop								
5681-01	BeCu	Silver	†	0.265	0.41	0.32	0.132	Fig. 1
With end stop								
5682-01	BeCu	Silver	0.108	0.262	0.41	0.32	0.132	Fig. 2
5682-02			0.131					
5682-11-R	BeCu	Bright tin	0.106					

† Hole in center of both clip and contact area.

Data sheet no. 2132

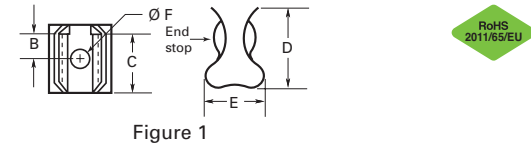
5674 PCB fuseclips with mounting holes for 9/32" dia. fuses



Catalog no.	Clip mat.	Finish	Dimensions - in					Ref.
			B	C	D	E	Ø F	
With end stop								
5674-01	BeCu	Silver	0.168	0.356	0.52	0.38	0.172	Fig. 1
5674-10		Bright tin						

Data sheet no. 2132

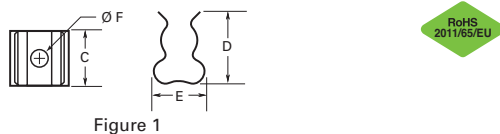
5960 PCB fuseclips with mounting holes for 13/32" dia. fuses



Catalog no.	Clip mat.	Finish	Dimensions - in					Ref.
			B	C	D	E	Ø F	
With end stop								
5960-07	BeCu	Silver	0.168	0.387	0.71	0.47	0.196	Fig. 1
5960-09			0.2				0.172	

Data sheet no. 2132

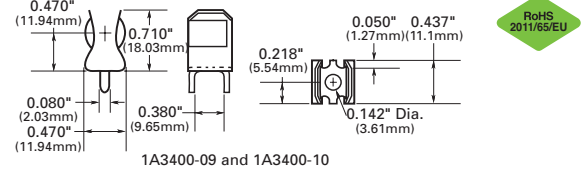
5592 PCB fuseclips with mounting holes for 9/16" dia. fuses



Catalog no.	Clip mat.	Finish	Dimensions - in					
			B	C	D	E	Ø F	Ref.
Without end stop								
5592-01	BeCu	Silver	0.252	0.56	0.875	0.6	0.2	Fig. 1

Data sheet no. 2132

1A3400 fuseclips with end stops and straight leads for 13/32" dia. fuses



Catalog no.	Clip mat.	Finish	Max amps
1A3400-09-R	Copper-clad steel	Bright tin	20
1A3400-10-R	Copper-clad steel	Silver	30

Data sheet no. 2131

Contents

Fuse type	Volts	Amp range	Catalog symbol/size	Section page
Compact high speed fuses				
Fuses	500 Vac/dc	50 to 400	CHSF	3
UL Class J full range drive fuse				
Fuses	600 Vac/450 Vdc	1 to 600	DFJ	4
North American fuses				
Fuses	130 Vac/dc	1000 to 4000	FWA	5
	150 Vac/dc	70 to 1000	FWA	6
	250 Vac/dc	35 to 2500	FWX	7
	500 Vac/dc	35 to 1600	FWH	8
	600 Vac	1 to 1000	KAC	9
	600 Vac	35 to 800	KBC	10
	700 Vac/dc	5 to 1200	FWP	11-12
	1000 Vac/800 Vdc	35 to 2000	FWJ	13
Accessories	Modular fuse blocks			14
British Standard BS88 fuses				
Fuses	240-250-280 Vac/150 Vdc	6 to 180	LCT, LET	15
	240-250 Vac/150 Vdc	160 to 900	LMT, LMMT	16
	690-700 Vac/500 Vdc	6 to 200	CT, ET, FE, EET and FEE	17-18
	690-700 Vac/350-450-500 Vdc	160 to 710	FM, FMM, MT and MMT	19-20
Accessories	Trip indicators, clips and microswitches			21

Continued next page

High speed fuses

Lead the charge with compact designs



Bussmann series 50-400 amp compact high speed fuses use up to 48% less enclosure space

Contents

Fuse type	Volts	Amp range	Catalog symbol/size	Section page
Ferrule				
Fuses	150 Vac/dc	5 to 30	FWA-_A10F (10x38mm)	22
	150 Vac/dc	35 to 60	FWA-_A21F (21x51mm)	
	250 Vac/dc	1 to 50	FWX (14x51mm)	23
	500 Vac	0.25 to 30	FWH-_A6F (6x32mm)	24
	500 Vac/dc	1 to 30	FWH-_14F (14x51mm)	25
	600-700 Vac/700 Vdc	1 to 32	FWC (10x38mm)	26
	690 Vac	4 to 32	FWP-_G10F (10x38mm)	27
	690-700 Vac/600-700 Vdc	1 to 50	FWP-_A14F (14x51mm)	28
	690 Vac	4 to 50	FWP-_G14F_ (14x51mm)	29
	700 Vac/dc	20 to 100	FWP-_A22F (22x58mm)	30
	690 Vac	20 to 100	FWP-_G22F_ (22x58mm)	31
	750 Vdc	5 to 30	FWK-_A20F (20x127mm)	32
	750 Vdc	35-60	FWK-_A25F (25x146mm)	
	1000 Vac/800 Vdc	20 to 30	FWJ (14x67mm)	33
	1200 Vac/1000 Vdc	20 to 30	FWL (20x127mm)	34
	1400-2000 Vac/1000 Vdc	2 to 15	FWS (20x127mm)	35
Accessories	J70032 700 V panel mount block for FWP 14x51mm fuses			
	JM70100 700 V DIN-Rail/panel mount modular blocks for FWP 22x58mm fuses			36
	CHM modular holders for FWA and FWC 10x38mm fuses			
	CH14 modular holders for FWX, FWH and FWP 14x51mm fuses			
	CH22 modular holders for FWP 22x58mm fuses			37
Square body				
DIN 43653	690-700 Vac/ 700 Vdc	10 to 400	170M — size 000 and 00	38-39
	690-700 Vac	40 to 2000	170M — size 1* to 3	40-41
	1000 Vac	20 to 315	170M — size 00	42
	1000 Vac	50 to 1400	170M — size 1* to 3	43-44
	1250-1300 Vac	50 to 1400	170M — size 1* to 3	45-46
DIN 43620	690 Vac	10 to 800	170M — size 00 to 3	47-48
	690-700 Vac	10 to 1600	170M — size 000 to 3 dual indicator	49-50
	1000 Vac	20 to 225	170M — size 00	51
French style	690-700 Vac	40 to 1600	170M — size 1* to 3	52-53
US style	690-700 Vac	40 to 2000	170M — size 1* to 3	54-55
	1000 Vac	50 to 1400	170M — size 1* to 3	56-57
	1250-1300 Vac	50 to 1400	170M — size 1* to 3	58-59
Flush-end contact	690 Vac	25 to 400	170M — size 00	60
	690-700 Vac	40 to 2000	170M — size 1* to 3	61-62
	1000 Vac	50 to 1400	170M — size 1* to 3	63-64
	1250-1300 Vac	50 to 1400	170M — size 1* to 3	65-66
	690-700 Vac	1000 to 4000	170M — size 4	67-68
	1000 Vac	1000 to 3000	170M — size 4	69
	1250 Vac	800 to 2500	170M — size 4	70
	660 Vac	1000 to 4000	170M — size 23	71-72
	1250 Vac	630 to 2800	170M — size 23	73
	690 Vac	2000 to 7500	170M — size 24	74
	1000 Vac	2000 to 5000	170M — size 24	75
Accessories	Fixed center blocks for DIN 43653 fuses			76-77
	Indicators			78
	Microswitches			78
IGBT fuses				
Fuses	750-800 Vdc	25 to 630	170M — size 000 and 230	79-80
	1000 Vdc	25 to 500	170M — size 000 and 230	81-82

CHSF — UL compact high speed fuse

500 Vac/dc (UL), 50 to 400 A

Bussmann™ series compact high speed fuses feature space-saving case sizes for protecting semiconductor devices up to 500 Vac/dc in ratings from 50 to 400 amps.

Ratings

- Volts
 - 500 Vac/dc (UL)
- Amps 50-400 A
- Interrupting rating
 - Max AC – 200 kA
 - Min AC 400%
 - Max DC – 50 kA
 - Min DC 800%

Operating class aR

Agency information

- UL Recognized, Guide JFHR2, File E56412
- CSA Component Acceptance, Class 1422-30, File 53787
- IEC aR (self certified)
- RoHS compliant
- CE



Features

- Requires up to 48% less enclosure space to help reduce the overall assembly size
- Innovative design allows for a significantly smaller package without compromising heat rise performance, preventing extensive equipment redesign
- Global acceptance with UL, CSA, IEC and RoHS for products sold worldwide
- Bolt-on design provides design flexibility for installation in fuse blocks or direct mounting on busbars
- Meets JASO D622 spec for thermal shock, humidity, and vibration
- Superior current cycling performance helps withstand demanding applications

Recommended fuse blocks

Up to 100 amps

Catalog no.	AWG wire size	Stud size
BH-0111	14-2/0 Cu	1/4-20
BH-0112	14-2/0 Cu	5/16-18
BH-0121	(2) 14-1/0 Cu	1/4-20
BH-0122	(2) 14-1/0 Cu	5/16-18
1BS101	14-2/0 Cu	1/4-20 x 1/2
See data sheet no. 1200 (BH-01_) and 1206 (1BS101) for details.		

Up to 400 amps

Catalog no.	AWG wire size	Stud size
BH-1131	6-250kcmil Cu	1/4-20
BH-1132	6-250kcmil Cu	5/16-18
1BS102	6-250kcmil Cu	1/4-20 x 1/2
See data sheet no. 1201 (BH-11_) and 1207 (1BS102) for details.		

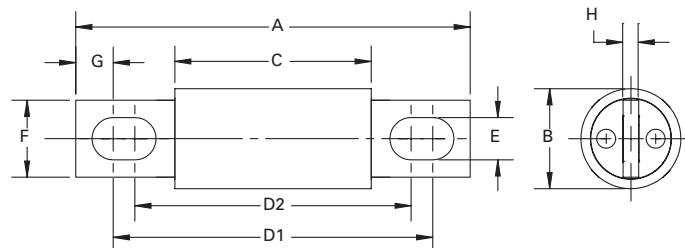
Catalog no.	Amps	AC/DC I ² t (A ² s) pre-arcing	AC* I ² t (A ² s) total clear	DC** I ² t (A ² s) total clear	Watts loss / percent of rated current	
					@ 80%	@ 50%
CHSF-50	50	304	1875	935	3.8	1.3
CHSF-60	60	438	2700	1346	4.5	1.5
CHSF-70	70	596	3675	1833	5.3	1.8
CHSF-80	80	778	4800	2394	6.1	2.0
CHSF-100	100	1216	7500	3740	7.6	2.5
CHSF-125	125	2042	12,721	6465	12.0	3.6
CHSF-150	150	2941	18,318	9309	14.3	4.3
CHSF-175	175	4003	24,933	12,671	16.7	5.1
CHSF-200	200	5228	32,566	16,550	19.1	5.8
CHSF-225	225	6835	48,028	21,278	26.1	7.0
CHSF-250	250	8438	59,293	26,270	29.0	7.8
CHSF-300	300	12,151	85,382	37,828	34.8	9.4
CHSF-350	350	16,539	116,215	51,488	40.6	10.9
CHSF-400	400	21,603	151,791	67,250	46.4	12.5

* @ 200 kA/500 Vac.

** @ 50 kA/500 Vdc.

Dimensions — mm

Amps	A	B	C	D1	D2	E	F	G	H
50-100	81	20	40	61	57	8.7	16	7.7	3.2
125-200	92	25	53	77	68	8.7	19	7.8	3.2
225-400	92	30	53	74	68	8.7	25	9.0	4.8



Data sheet no. 10414

4 — High speed fuses

DFJ — UL Class J full range high speed fuse

600 Vac/450 Vdc (UL), 1 to 600 A

UL Class J high speed, full range current-limiting fuses provide maximum protection for AC and DC drives and controllers. The UL Class J Bussmann series DFJ fuse has the lowest I^2t of any branch circuit fuse to protect power semiconductor devices that utilize diodes, GTOs, SCRs and SSRs. The DFJ fuse combines the performance of high speed fuses in a full range Class J branch circuit package, allowing the use of readily available Class J fuse blocks, holders and switches. The DFJ uses standard Class J holders and blocks. See section 8 for available catalog numbers.

Ratings

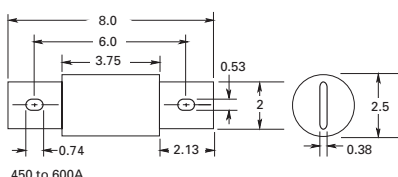
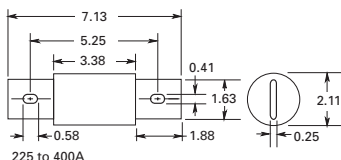
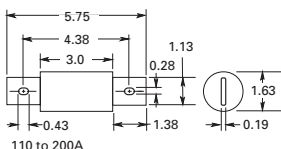
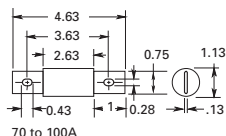
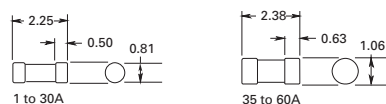
- Volts
 - 600 Vac (UL)
 - 450 Vdc (UL 15-600 A)
- Amps 1-600 A
- IR
 - 200 kA RMS Sym.
 - 100 kA DC

Operating class gR

Agency information

- UL Listed, Std 248-8, Class J, Guide JDDZ, File E4273
- CSA Certified, C22-2 No 248.8, Class 1422-02, File 53787
- CE

Dimensions — in



Catalog no.	Amps	I^2t (A ² Sec) @ 600 Vac/100 kA		
		Pre-arc	Clearing	Watts loss*
DFJ-1	1	—	—	—
DFJ-2	2	—	—	—
DFJ-3	3	—	—	—
DFJ-4	4	—	—	—
DFJ-5	5	—	—	—
DFJ-6	6	—	—	—
DFJ-8	8	—	—	—
DFJ-10	10	—	—	—
DFJ-12	12	—	—	—
DFJ-15	15	4	110	4.1
DFJ-17.5	17.5	—	—	—
DFJ-20	20	8	365	4.0
DFJ-25	25	12	610	4.9
DFJ-30	30	20	1000	5.5
DFJ-35	35	55	1100	6.8
DFJ-40	40	90	1900	8.6
DFJ-50	50	140	2800	8.7
DFJ-60	60	290	6000	8.5
DFJ-70	70	450	3100	12
DFJ-80	80	650	4600	13
DFJ-90	90	1010	7200	13
DFJ-100	100	1460	10,500	13
DFJ-110	110	1710	9500	17
DFJ-125	125	3580	20,000	15
DFJ-150	150	5080	28,000	19
DFJ-175	175	6310	35,000	23
DFJ-200	200	9850	54,500	24
DFJ-225	225	11,420	51,000	29
DFJ-250	250	17,000	74,500	30
DFJ-300	300	23,500	103,000	36
DFJ-350	350	38,800	170,000	39
DFJ-400	400	62,200	272,000	40
DFJ-450	450	44,600	270,000	56
DFJ-500	500	79,500	480,000	52
DFJ-600	600	138,000	830,000	57

* Watts loss at rated current.

FWA — North American

130 Vac/dc (UL), 1000 to 4000 A

North American style flush-end high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters.

Ratings

- Volts 130 Vac/dc
- Amps 1000-4000 A
- IR
 - 200 kA RMS Sym at 130 Vac
 - 50 kA at 130 Vdc

Agency information

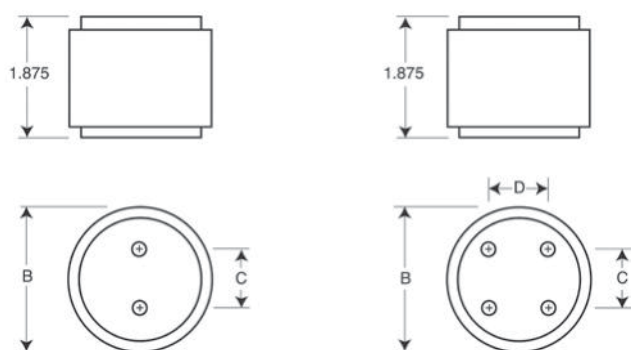
- UL Recognized, JFHR2, E91958 on 1000-2000 A fuses
- CE



Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
		Pre-arcing	Clearing at 130 Vac		
130 Vac/dc (UL)	1000	170,000	460,000	60	FWA-1000AH
	1200	270,000	730,000	70	FWA-1200AH
	1500	520,000	1,400,000	78	FWA-1500AH
	2000	860,000	2,400,000	108	FWA-2000AH
	2500	1,500,000	4,100,000	130	FWA-2500AH
	3000	2,100,000	5,700,000	150	FWA-3000AH
	4000	3,400,000	9,200,000	257	FWA-4000AH

† Watts loss at rated current.

Dimensions — in



1000-3000 A

4000 A

Amp range	B	C	D	Thread / depth
1000 to 2000	2.0	1.0	—	3/8-24 x 1/2" UNF
2500 to 3000	3.0	1.5	—	1/2-20 x 1/2" UNF
4000	3.5	1.5	1.5	1/2-20 x 1/2" UNF

1" = 25.4mm

High speed fuses

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720001, 5785301

4 — High speed fuses

FWA — North American

150 Vac/dc (UL), 70 to 1000 A

North American style bolted tag high speed fuses used for the protection of DC common bus, DC drives, power converters / rectifiers and reduced rated voltage starters.

Ratings

- Volts
 - 150 Vac/dc (UL)
 - 80 Vdc 1000 A only
- Amps 70-1000 A
- IR
 - 100 kA RMS Sym. (70-400 A)
 - 200 kA RMS Sym. (450-1000 A)
 - 20 kA at 150 Vdc (70-800 A)
 - 100 kA at 80 Vdc (70-1000 A)

Agency information

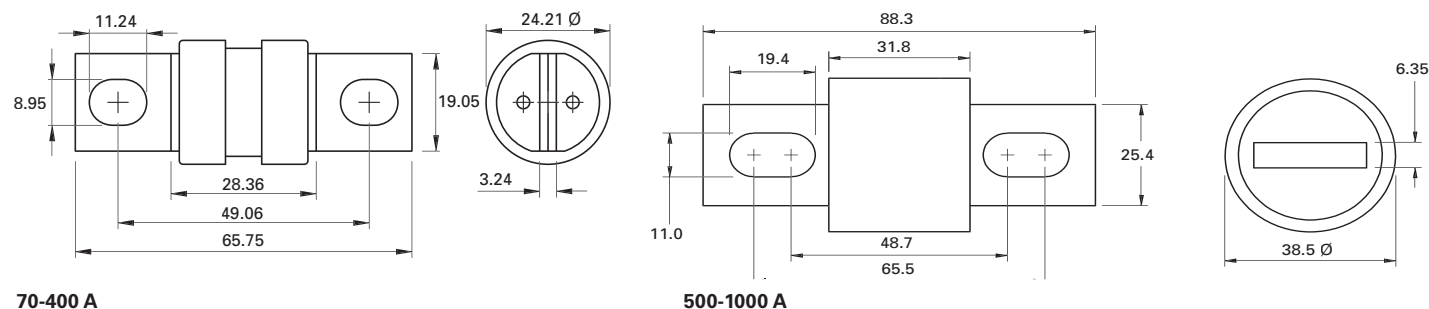
- UL Recognized JFHR2, E91958
- CE



Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
		Pre-arcing	Clearing at 150 Vac		
150 Vac/dc (UL)	70	470	4000	6.9	FWA-70B
	80	670	6000	7.7	FWA-80B
	100	1200	12,000	9.0	FWA-100B
	125	1870	18,000	11.2	FWA-125B
	150	2700	26,000	13.5	FWA-150B
	200	4780	45,000	17.6	FWA-200B
	250	7470	70,000	22.5	FWA-250B
	300	10,760	100,000	27.0	FWA-300B
	350	15,700	140,000	30.6	FWA-350B
	400	20,300	180,000	35.2	FWA-400B
	500	39,000	120,000	35.0	FWA-500A
	600	46,000	140,000	47.0	FWA-600A
	700	75,000	220,000	49.0	FWA-700A
	800	92,000	280,000	58.0	FWA-800A
80 Vdc	1000	170,000	510,000	60.0	FWA-1000A

† Watts loss at rated current.

Dimensions — mm



For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720002, 5785310

FWX — North American

250 Vac/dc (UL), 35 to 2500 A

North American style bolted tags and flush-end high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters.

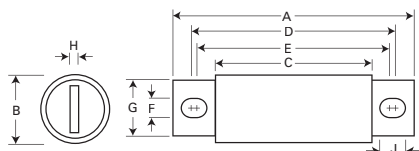
Ratings

- Volts 250 Vac/dc (UL)
- Amps 35-2500 A
- IR
 - 200 kA RMS Sym.
 - 20 kA at 250 Vdc (35-800 A)

Agency information

- UL Recognized, JFHR2, E56412
- CSA Class 1422-30, (53787) on 35-800 A fuses (20 kA IR at 250 Vdc)
- CE

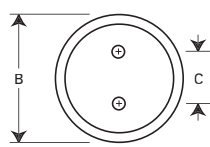
Dimensions — in



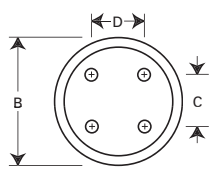
35-800 A



1000-1200 A



1500-2500 A



Amp range	A	B	C	D	E	F	G	H	J	Thread / depth
35-60	3.19	0.81	1.59	2.59	2.25	0.34	0.63	0.13	0.52	—
70-200	3.13	1.22	1.59	2.44	2.19	0.34	1.00	0.19	0.47	—
225-600	3.84	1.50	1.59	2.94	2.25	0.41	1.00	0.25	0.75	—
700-800	3.84	2.00	1.59	3.03	2.28	0.41	1.50	0.25	0.78	—
1000-1200	2.59	3.00	1.50	—	—	—	—	—	—	3/8-24
1500-2500	2.59	3.50	1.50	1.50	—	—	—	—	—	x 1/2" UNF

1" = 25.4mm



Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
		Pre-arcing	Clearing at 250 Vac		
	35	50	230	4.2	FWX-35A
	40	60	310	5.2	FWX-40A
	45	80	390	5.7	FWX-45A
	50	100	520	6.0	FWX-50A
	60	140	740	8.1	FWX-60A
	70	330	1400	7.2	FWX-70A
	80	430	1850	8.1	FWX-80A
	90	570	2450	9.0	FWX-90A
	100	740	3150	10.0	FWX-100A
	125	1130	4850	12.5	FWX-125A
	150	1620	6950	15.7	FWX-150A
	175	2170	9300	18.5	FWX-175A
	200	2790	12,000	22.0	FWX-200A
	225	3210	14,700	24.0	FWX-225A
	250	3960	18,100	27.0	FWX-250A
	275	4720	21,600	31.0	FWX-275A
	300	6000	27,300	32.0	FWX-300A
	350	10,600	48,600	39.0	FWX-350A
	400	14,500	66,100	44.0	FWX-400A
	450	22,100	101,000	49.0	FWX-450A
	500	28,000	128,000	54.0	FWX-500A
	600	41,100	188,000	62.0	FWX-600A
	700	48,800	190,000	72.0	FWX-700A
	800	59,000	230,000	84.0	FWX-800A
	1000	44,000	360,000	100.0	FWX-1000AH
	1200	92,000	750,000	103.0	FWX-1200AH
	1500	120,000	880,000	140.0	FWX-1500AH
	1600	160,000	1,200,000	140.0	FWX-1600AH
	2000	320,000	2,300,000	151.0	FWX-2000AH
	2500	670,000	4,700,000	163.0	FWX-2500AH

† Watts loss at rated current.

High speed fuses

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720005, 359 (35-800 A), 5785299 (100-2500 A)

4 — High speed fuses

FWH — North American

500 Vac/dc (UL), 35 to 1600 A

North American style bolted tags high speed fuses, for the protection of DC common bus, power converters/rectifiers and reduced rated voltage starters.

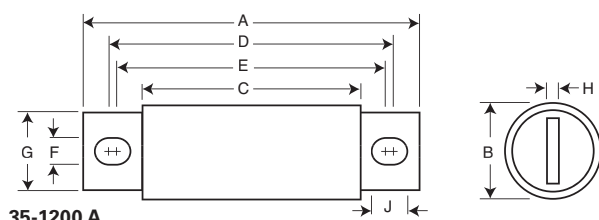
Ratings

- Volts
 - 500 Vac (UL)
 - 500 Vdc (35-800 A only)
- Amps 35-1600 A
- IR
 - 200 kA RMS Sym.
 - 50 kA at 500 Vdc

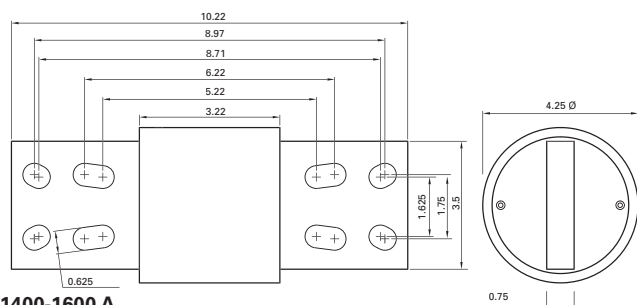
Agency information

- UL Recognized, JFHR2, E91958, FWH_B (35-200 A) and FWH_A (1000 and 1200 A), JFHR2, E56412 FWH_A (225-800 A)
- CSA Class 1422-30, File 53787 (35-1600 A)
- CE

Dimensions — in



35-1200 A



1400-1600 A

Amp range	A	B	C	D	E	F	G	H	J
35-60	3.19	0.81	1.59	2.54	2.19	0.34	0.72	0.13	0.52
70-100	3.62	0.95	1.74	2.85	2.81	0.35	0.75	0.13	0.38
125-200	3.62	1.16	1.84	2.89	2.77	0.34	1.00	0.19	0.41
225-400	4.34	1.50	2.09	3.44	2.75	0.41	1.00	0.25	0.75
450-600	4.34	2.00	2.09	3.53	2.78	0.41	1.50	0.25	0.78
700-800	6.34	2.50	2.09	4.97	3.44	0.53	2.00	0.38	1.30
1000-1200	6.97	3.00	3.22	5.47	4.48	0.62	2.38	0.44	1.12
1400-1600	Refer to drawing								

1" = 25.4mm



Rated voltage	Rated current (amps)	I²t (A²s)		Watts loss (W)†	Catalog no.
		Pre-arcing	Clearing at 250 Vac		
500 Vac/dc (UL)	35	34	150	8.0	FWH-35B
	40	76	320	7.5	FWH-40B
	45	105	450	7.5	FWH-45B
	50	135	670	7.5	FWH-50B
	60	210	900	9.9	FWH-60B
	70	210	900	10.6	FWH-70B
	80	305	1400	12.7	FWH-80B
	90	360	1600	15.0	FWH-90B
	100	475	2000	17.0	FWH-100B
	125	800	3500	25.0	FWH-125B
	150	1100	4600	30.0	FWH-150B
	175	1450	6200	35.0	FWH-175B
500 Vac/dc (UL)	200	1900	8500	40.0	FWH-200B
	225	4600	23,300	39.0	FWH-225A
	250	6300	32,200	41.0	FWH-250A
	275	7900	40,300	46.0	FWH-275A
	300	9800	49,800	51.0	FWH-300A
	325	13,700	63,800	53.0	FWH-325A
	350	14,500	72,900	58.0	FWH-350A
	400	19,200	96,700	65.0	FWH-400A
	450	24,700	127,000	74.0	FWH-450A
	500	29,200	149,000	84.0	FWH-500A
	600	41,300	206,000	108.0	FWH-600A
	700	55,000	298,000	120.0	FWH-700A
500 Vac (UL)	800	76,200	409,000	129.0	FWH-800A
	1000	92,000	450,000	145.0	FWH-1000A
	1200	122,000	600,000	180.0	FWH-1200A
	1400	200,000	1,000,000	210.0	FWH-1400A
	1600	290,000	1,400,000	230.0	FWH-1600A

† Watts loss at rated current.

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720007, 360 (225-800 A), 5785304 (35-200 A, 1000-1600 A)

KAC — North American

600 Vac (UL), 1 to 1000 A

North American style bolted tags high speed fuses. These fuses are supplied as replacements only. For new installations, Eaton recommends the 700 V FWP. See page 4-11.

Ratings

- Volts 600 Vac
- Amps 1-1000 A
- IR 200 kA RMS Sym.

Agency information

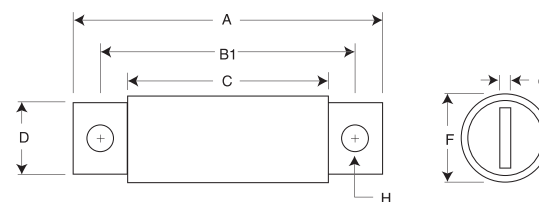
- UL Recognized, JFHR2, E56413 (1-600 A only)
- CE



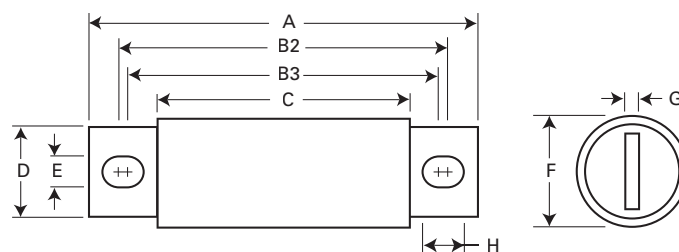
Rated voltage	Rated current (amps)	Catalog no.
	1	KAC-1
	2	KAC-2
	3	KAC-3
	4	KAC-4
	5	KAC-5
	6	KAC-6
	7	KAC-7
	8	KAC-8
	9	KAC-9
	10	KAC-10
	12	KAC-12
	15	KAC-15
	17.5	KAC-17.5
	20	KAC-20
	25	KAC-25
	30	KAC-30
	35	KAC-35
	40	KAC-40
	45	KAC-45
	50	KAC-50
	60	KAC-60
	70	KAC-70
	80	KAC-80
	90	KAC-90
	100	KAC-100
	110	KAC-110
	125	KAC-125
	150	KAC-150
	175	KAC-175
	200	KAC-200
	225	KAC-225
	250	KAC-250
	300	KAC-300
	350	KAC-350
	400	KAC-400
	450	KAC-450
	500	KAC-500
	600	KAC-600
	700	KAC-700
	800	KAC-800
	1000	KAC-1000

600 Vac (UL)

Dimensions — in



1-30 A and 450-1000 A



35-400 A

Amp range	A	B1	B2	B3	C	D	E	F	G	H
1-30	2.88	2.50	—	—	1.88	0.41	—	0.56	0.06	0.26
35-60	4.38	—	3.75	3.50	2.75	0.63	0.34	0.81	0.09	0.47
70-100	5.00	—	4.06	3.66	2.75	0.75	0.41	1.00	0.13	0.61
110-200	5.14	—	4.39	3.77	2.91	1.00	0.41	1.50	0.19	0.72
225-400	6.18	—	4.82	4.57	3.00	1.63	0.56	2.00	0.25	0.69
450-800	6.25	4.75	—	—	3.06	2.00	—	2.50	0.25	0.56
1000	7.25	4.75	—	—	3.06	2.75	—	3.50	0.38	0.56

1" = 25.4mm

High speed fuses

4 — High speed fuses

KBC — North American

600 Vac (UL), 35 to 800 A

North American style bolted tags and flush-end high speed fuses. These fuses are supplied as replacements only. For new installations, Eaton recommends the 700 V FWP fuses. See page 4-11.

Ratings

- Volts 600 Vac (UL)
- Amps 35-800 A
- IR 200 kA RMS Sym.

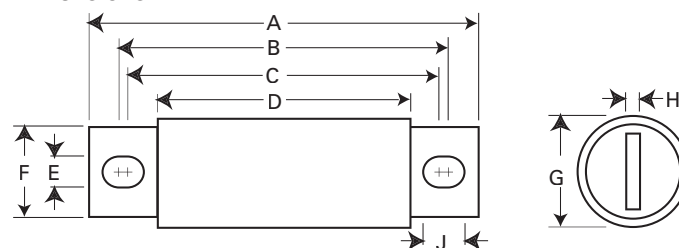
Agency information

- UL Recognized, JFHR2, E56412 (35-600 A only)
- CE

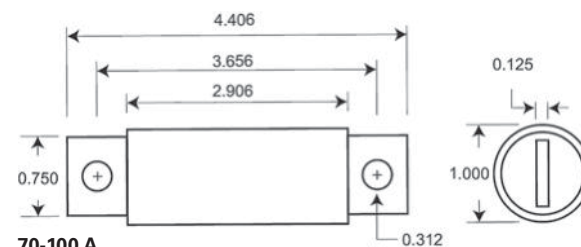
Rated voltage	Rated current (amps)	Catalog no.
600 Vac (UL)	35	KBC-35
	40	KBC-40
	45	KBC-45
	50	KBC-50
	60	KBC-60
	70	KBC-70
	80	KBC-80
	90	KBC-90
	100	KBC-100
	110	KBC-110
	125	KBC-125
	150	KBC-150
	175	KBC-175
	200	KBC-200
	225	KBC-225
	250	KBC-250
	300	KBC-300
	350	KBC-350
	400	KBC-400
	450	KBC-450
	500	KBC-500
	600	KBC-600
	800	KBC-800



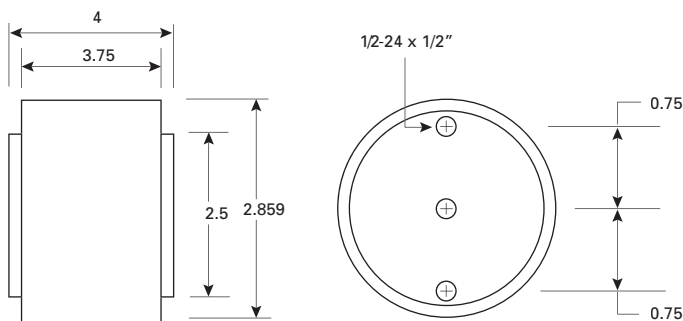
Dimensions — in



35-60 and 110-600 A



70-100 A



800 A

Rated current (amps)	A	B	C	D	E	F	G	H	J
35-60	4.38	3.75	3.50	2.75	0.34	0.63	0.81	0.09	0.47
70-100	Refer to drawing								
110-200	4.41	3.72	3.59	2.91	0.31	0.88	1.22	0.19	0.38
225-400	5.13	4.19	3.56	2.91	0.41	1.00	1.50	0.25	0.72
450-600	5.13	4.39	3.69	2.88	0.41	1.50	2.00	0.25	0.76
800	Refer to drawing								

1" = 25.4mm

FWP — North American

700 Vac/dc (UL), 5 to 1200 A

North American style bolted tags high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers, reduced rated voltage starters.

Ratings

- Volts 700 Vac/dc (UL)
- Amps 5-1200 A
- IR
 - 200 kA RMS Sym.
 - 50 kA at 700 Vdc (Type A)
 - 50 kA at 500 Vdc (Type B)

Agency information

- UL Recognized, JFHR2, E91958 FWP-_B (5-100 A, 700-1200 A), JFHR2, E56412 FWP-_A (125-600 A)
- CSA Class 1422-30, (53787) on 5-800 A
- CE



High speed fuses

Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
		Pre-arcing	Clearing at 700 Vac		
700 Vac/dc (UL)	5	1.6	11	1.5	FWP-5B
	10	3.6	22	4.0	FWP-10B
	15	10.0	70	5.5	FWP-15B
	20	26.0	180	6.0	FWP-20B
	25	44.0	320	7.0	FWP-25B
	30	58.0	450	9.0	FWP-30B
	35	34.0	160	12.0	FWP-35B
	40	76.0	320	12.0	FWP-40B
	50	135.0	600	12.0	FWP-50B
	60	210.0	950	15.5	FWP-60B
	70	305.0	2000	18.0	FWP-70B
	80	360.0	2400	21.0	FWP-80B
	90	415.0	2700	25.0	FWP-90B
	100	540.0	3500	27.0	FWP-100B
	125	1800.0	7300	28.0	FWP-125A
	150	2900.0	11,700	32.0	FWP-150A
	175	4200.0	16,700	35.0	FWP-175A
	200	5500.0	22,000	43.0	FWP-200A
	225	7700.0	31,300	45.0	FWP-225A
	250	10,500.0	42,500	48.0	FWP-250A
	300	17,600.0	71,200	58.0	FWP-300A
	350	23,700.0	95,600	65.0	FWP-350A
	400	31,000.0	125,000	78.0	FWP-400A
	450	36,400.0	137,000	94.0	FWP-450A
	500	45,200.0	170,000	107.0	FWP-500A
	600	66,700.0	250,000	122.0	FWP-600A
	700	54,000.0	300,000	125.0	FWP-700A
	800	78,000.0	450,000	140.0	FWP-800A
	900	91,500.0	530,000	150.0	FWP-900A
	1000	120,000.0	600,000	170.0	FWP-1000A
	1200	195,000.0	1,100,000	190.0	FWP-1200A

† Watts loss at rated current.

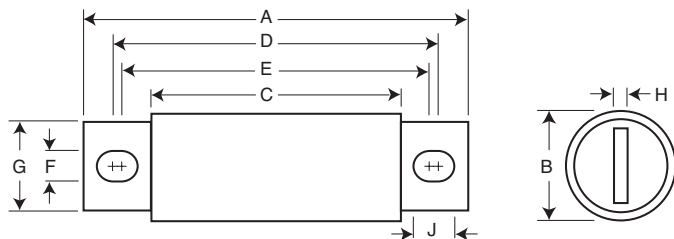
For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720012, 5785316 (5-30 A), 361 (125-600 A), 5785308 (35-100 A, 700-1200 A)

4 — High speed fuses

FWP — North American

700 Vac/dc (UL), 5 to 1200 A

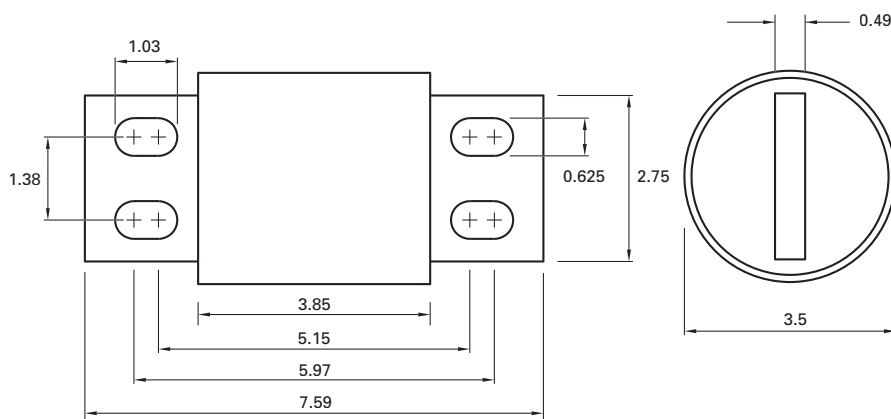
Dimensions — in



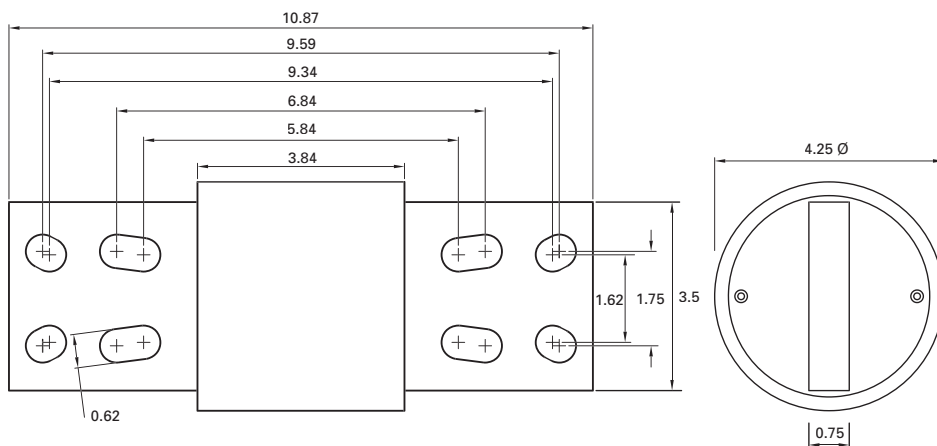
5-800 A

Amp range	A	B	C	D	E	F	G	H	J
5-30	2.87	0.56	1.86	2.48	2.48	0.25	0.41	0.06	0.25
35-60	4.38	0.81	2.75	3.71	3.31	0.34	0.73	0.13	0.54
70-100	4.41	0.95	2.59	3.63	3.56	0.34	0.75	0.13	0.38
125-200	5.09	1.50	2.84	4.19	3.5	0.41	1.00	0.25	0.75
225-400	5.09	2.00	2.84	4.28	3.53	0.41	1.50	0.25	0.78
450-600	7.09	2.50	2.84	5.72	4.19	0.53	2.00	0.38	1.30
700-800	6.63	2.00	2.76	5.56	5.06	0.63	1.50	0.25	0.88
900-1000	Refer to drawing								
1200	Refer to drawing								

1" = 25.4mm



900-1000 A -mm



1200 A -mm

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720012, 5785316 (5-30 A), 361 (125-600 A), 5785308 (35-100 A, 700-1200 A)

FWJ — North American

1000 Vac /800 Vdc (UL), 35 to 2000 A

North American style bolted tags high speed fuses for the protection of DC common bus, DC drives power converters/rectifiers, reduced voltage starters and high voltage traction inverters.

Ratings

- Volts
 - 1000 Vac
 - 800 Vdc
- Amps 35-2000 A
- IR
 - 25 kA RMS Sym. (35-200 A)
 - 100 kA RMS Sym. (250-2000 A)
 - 50 kA at 800 Vdc (35-200 A and 450-600 A)

Agency information

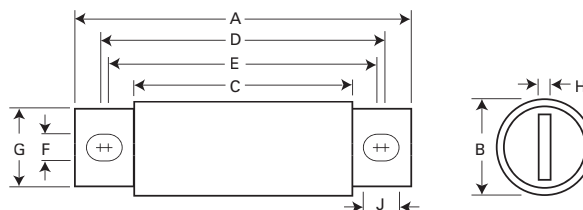
- UL Recognized, JFHR8, E91958 on 50-600 A only
- CE



Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
		Pre-arcing	Clearing at 1000 Vac		
1000 Vac/ 800 Vdc (UL)	35	210	2000	7	FWJ-35A
	40	300	2500	8	FWJ-40A
	50	470	3500	10	FWJ-50A
	60	670	5000	11	FWJ-60A
	70	1100	6900	12	FWJ-70A
	80	1550	9700	13	FWJ-80A
	90	1900	12,000	14	FWJ-90A
	100	2800	17,500	15	FWJ-100A
	125	4800	35,000	16	FWJ-125A
	150	6300	45,000	25	FWJ-150A
	175	7500	65,000	30	FWJ-175A
	200	11,700	80,000	32	FWJ-200A
	250	16,000	112,000	50	FWJ-250A
	300	23,500	164,000	56	FWJ-300A
	350	33,000	231,000	62	FWJ-350A
	400	47,000	330,000	67	FWJ-400A
	500	39,500	329,000	95	FWJ-500A
	600	61,000	520,000	105	FWJ-600A
	800	87,000	500,000	182	FWJ-800A
	1000	190,000	1,100,000	206	FWJ-1000A
	1200	370,000	2,100,000	240	FWJ-1200A
	1400	470,000	2,700,000	248	FWJ-1400A
	1600	700,000	4,000,000	267	FWJ-1600A
	1800	925,000	5,300,000	239	FWJ-1800A
	2000	1,330,000	7,600,000	244	FWJ-2000A

† Watts loss at rated current.

Dimensions — in



Amp range	A	B	C	D	E	F	G	H	J
35-60	5.00	0.94	3.11	4.24	4.18	0.35	0.75	0.13	0.38
70-100	4.93	1.13	3.09	4.27	4.16	0.35	1.00	0.19	0.41
125-200	5.69	1.53	3.26	4.80	4.06	0.45	1.00	0.25	0.82
250-400	5.77	2.00	3.50	4.81	4.15	0.43	1.50	0.25	0.76
500-600	7.20	2.50	3.47	5.98	4.71	0.56	2.00	0.38	1.20
800-2000	6.81	3.50	3.31	5.47	4.96	0.63	2.75	0.50	0.88

1" = 25.4mm

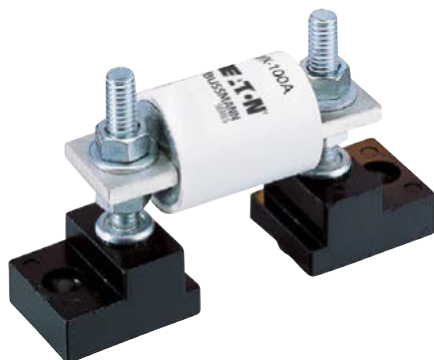
For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720027, 5785303 (35-600 A), 5785309 (800-2000 A),

North American Accessories

Modular fuse blocks

Bussmann series line of fuse blocks provides the user with design and manufacturing flexibility. Two identical half blocks make up a modular assembly that can be panel mounted any distance apart to accommodate any length fuse.

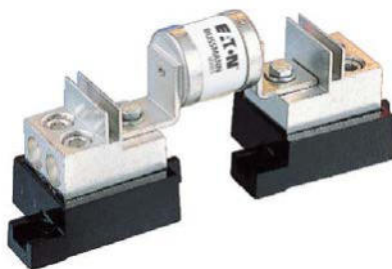
C5268 stud type



The simpler design is the C5268 modular fuse block. With this design, the fuse terminal and cable (with termination) are mounted on the same stud, minimizing installation labor. The stud type block is available in the configurations shown in the table below.

Catalog no.	Max fuse amp rating	Stud
C5268-1	200	5/16-18 x 1"
C5268-2	200	5/16-18 x 1-3/4"
C5268-3	200	5/16-18 x 3/4"
C5268-4	100	1/4-20 x 1"
C5268-5	100	1/4-20 x 1-3/4"

1BS10x connector type



Bussmann series 1BS10 blocks utilize a tin-plated connector for wire termination and heat dissipation), and a plated-steel stud for fuse mounting. The connector type block is available in the configurations shown below. Consult your Bussmann series product representative for additional product details.

Catalog no.	Max rated voltage	Max fuse amp rating
1BS101	600	100
1BS102	600	400
1BS103	600	400
1BS104	600	600

BH modular type



BH modular blocks provide a wide range of mounting configurations for Bussmann series high speed semiconductors fuses. BH fuse blocks have a short-circuit current rating up to 200 kA RMS Sym.

Catalog no.	Max rated voltage	Max fuse amp rating
BH-0	700	100
BH-1	2500	400
BH-2	5000	600
BH-3	1250	700

LCT, LET BS88

240 Vac/150 Vdc (IEC), 250-280 Vac/150 Vdc (UL), 6 to 180 A

BS88 style bolted tag high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters. Low watts loss in a compact size.

Ratings

- Volts
 - LCT 240 Vac/150 Vdc (IEC), 250 Vac/150 Vdc (UL)
 - LET 280 Vac/150 Vdc (UL, 25-160 A), 250 Vac/150 Vdc (UL 180 A)
- Amps 6-180 A
- IR
 - 200 kA RMS Sym.
 - 50 kA DC at 125 Vdc
 - 100 kA at 80 Vdc (70-1000 A)

Operating class aR.

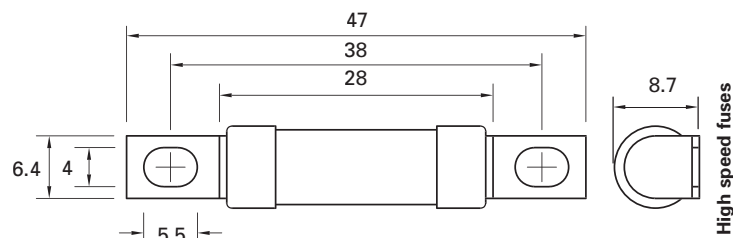
Agency information

- Designed and tested to BS88 Part 4 and IEC 60269 Part 4
- UL Recognized*
- CCC (LCT only)
- CE

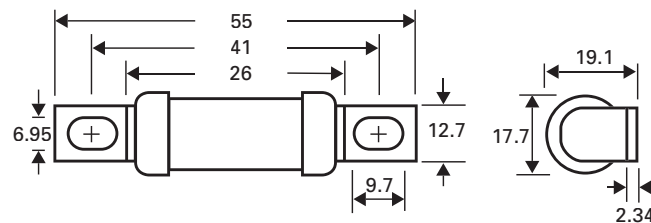
* All fuses have been tested at 318 Vac. Consult Bussmann series product representative for UL Recognized status.



Dimensions — mm



LCT



Indicator (optional) 

LET — indicator optional

Fuse symbol	Rated voltage	Rated current(amps)	I ² t (A ² s)			Catalog no.
			Pre-arcing	Clearing at 240 Vac	Watts loss (W)†	
LCT	240 Vac/150 Vdc (IEC) 250 Vac/150 Vdc (UL)	6	2.0	9	1.0	6LCT
		10	3.8	22	2.5	10LCT
		12	7.0	32	2.5	12LCT
		16	20.0	100	2.5	16LCT
		20	25.0	160	4.0	20LCT
LET	280 Vac/150 Vdc (UL) 250 Vac/150 Vdc (UL)	25	18.0	250	4.0	25LET
		32	32.0	450	5.0	32LET
		35	50.0	600	5.0	35LET
		50	100.0	1400	7.0	50LET
		63	180.0	2200	9.0	63LET
		80	300.0	3800	10.0	80LET
		100	600.0	7500	10.0	100LET
		125	600.0	7500	16.0	125LET
		160	1100.0	16,000	20.0	160LET
		180	1600.0	29,000	21.0	180LET

† Watts loss at rated current.

Note: 7LET, 10LET, 12LET and 16LET are available for replacement purposes on existing equipment.

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720004, 5785296 (LCT), 5785293 (LET)

LMT, LMMT BS88

240 Vac/150 Vdc (IEC), 250 Vac/150 Vdc (UL), 160 to 900 A

BS88 style bolted tags high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters. Low watts loss in a compact size.

Ratings

- Volts
 - 240 Vac/150 Vdc (IEC)
 - 250 Vac/150 Vdc (UL)
- Amps 160-900 A
- IR
 - 200 kA RMS Sym., 40 kA at 150 Vdc (IEC)
 - 200 kA RMS Sym., 50 kA at 150 Vdc (UL)

Operating class aR

Agency information

- Designed and tested to BS88 Part 4 and IEC 60269 Part 4
- UL Recognized*
- CCC
- CE

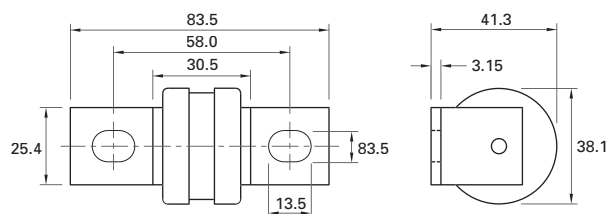
* All fuses have been tested at 318 Vac. Consult Bussmann series product representative for UL Recognized status.



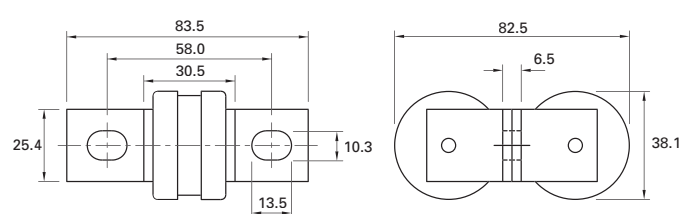
		I²t (A²s)					
Fuse symbol	Rated voltage	Rated current (amps)	Clearing at		Watts loss (W)†	Catalog no.	
			Pre-arcing	120 Vac 240 Vac			
LMT	240 Vac /150 Vdc (IEC) 250 Vac /150 Vdc (UL)	160	1100	7000	16,000	17	160LMT
		200	1500	10,000	20,000	28	200LMT
		250	3200	20,000	40,000	28	250LMT
		315	6000	35,000	75,000	35	315LMT
		355	8000	50,000	100,000	35	355LMT
		400	14,000	70,000	160,000	40	400LMT
		450	18,000	100,000	220,000	42	450LMT
LMMT	240 Vac /150 Vdc (IEC) 250 Vac /150 Vdc (UL)	400	6000	35,000	80,000	60	400LMMT
		500	14,000	80,000	170,000	64	500LMMT
		630	24,000	150,000	300,000	75	630LMMT
		710	32,000	200,000	460,000	77	710LMMT
		800	52,000	300,000	600,000	82	800LMMT
		900	75,000	400,000	800,000	97	900LMMT

† Watts loss at rated current.

Dimensions — mm



LMT — indicator optional



LMMT — indicator optional

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720004, 5785294 (LMT), 5785295 (LMMT)

CT, ET, FE, EET, FEE BS88

690 Vac/500 Vdc (IEC), 700 Vac/500 Vdc (UL), 6 to 200 A

BS88 style bolted tags high speed fuses for the protection of DC common bus, DC drives, power converters /rectifiers and reduced rated voltage starters.

Ratings

- Volts
 - 690 Vac/500 Vdc (IEC)
 - 700 Vac/500 Vdc (UL)
- Amps 6-200 A
- IR
 - CT: IEC — 90 kA RMS Sym., 40 kA at 500 Vdc, UL — 200 kA RMS Sym., 50 kA at 500 Vdc
 - ET, EET, FE and FEE: 200 kA RMS Sym., 50 kA at 500 Vdc

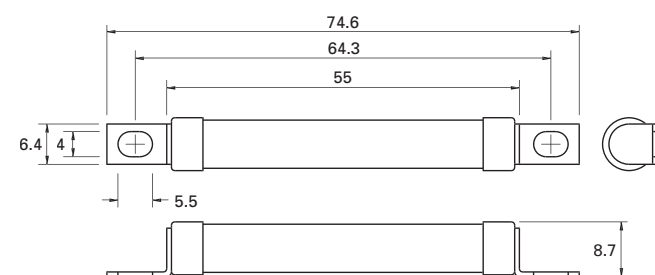
Operating class aR

Agency information

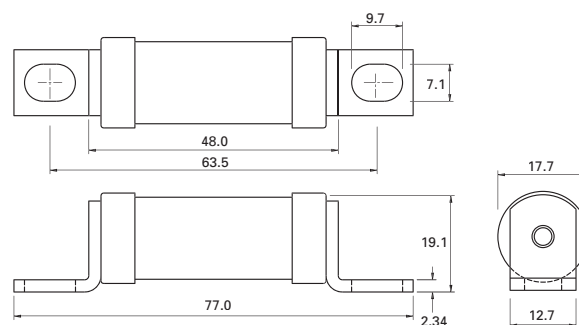
- Designed and tested to BS88 part 4 and IEC 60269 Part 4
- UL Recognized*
- CCC for ET, FE, EET, FEE
- CE

* Consult your Bussmann series product representative for UL Recognized status.

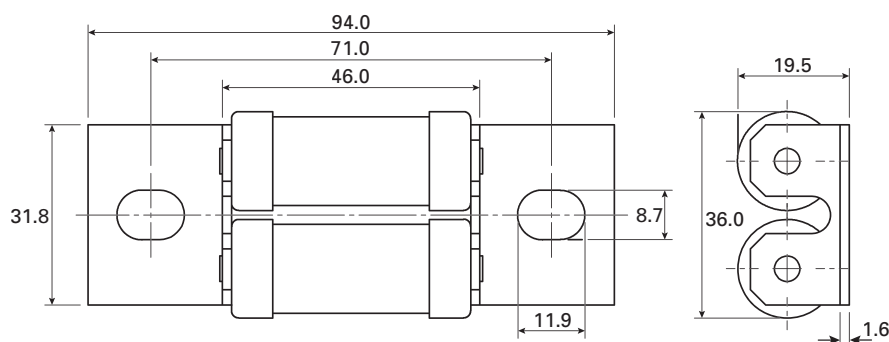
Dimensions — mm



CT



ET, FE — indicator optional



EET, FEE — indicator optional

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 5785312 (CT, ET), 5785314 (FE), 5785313 (EET), 5785292 (FEE)



CT, ET, FE, EET, FEE BS88

690 Vac/500 Vdc (IEC), 700 Vac/500 Vdc (UL), 6 to 200 A

Fuse symbol	Rated voltage	Rated current (amps)	I ² t (A ² s)			Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 415 Vac	Clearing at 660 Vac		
CT	690 Vac/500 Vdc (IEC)	6	1.8	8.5	12	2	6CT
		10	7.0	30.0	48	3	10CT
	700 Vac/500 Vdc (UL)	12	10.0	40.0	65	3	12CT
		16	16.0	66.0	110	7	16CT
		20	32.0	150.0	220	7	20CT
ET	690 Vac/500 Vdc (IEC)	25	25.0	150.0	250	7	25ET
		32	32.0	190.0	350	11	32ET
		35	52.0	310.0	500	11	35ET
		40	103.0	600.0	900	9	40ET
		45	103.0	680.0	1100	11	45ET
	700 Vac/500 Vdc (UL)	56	135.0	950.0	1500	14	56ET
		63	171.0	1200.0	2000	16	63ET
		80	360.0	2500.0	4000	18	80ET
		100	470.0	1800.0	2800	23	100FE
FE	690 Vac/500 Vdc (IEC)	35	33.0	130.0	200	9	35FE
		40	52.0	180.0	300	9	40FE
		45	76.0	270.0	450	11	45FE
		50	103.0	380.0	600	11	50FE
		63	135.0	480.0	750	12	63FE
	700 Vac/500 Vdc (UL)	71	210.0	600.0	950	17	71FE
		80	250.0	900.0	1500	20	80FE
		90	360.0	1300.0	2100	20	90FE
		100	470.0	1800.0	2800	23	100FE
EET	690 Vac/500 Vdc (IEC)	90	490.0	300.0	4500	19	90EET
		110	600.0	4000.0	6500	27	110EET
	700 Vac/500 Vdc (UL)	140	1050.0	7000.0	12,000	35	140EET
		160	1500.0	10,000.0	17,000	39	160EET
FEE	690 Vac/500 Vdc (IEC)	100	400.0	1600.0	2400	24	100FEE
		120	540.0	1900.0	3100	32	120FEE
		140	850.0	2500.0	3800	36	140FEE
		160	1000.0	3700.0	5700	46	160FEE
		180	1400.0	5300.0	8400	46	180FEE
		200	1900.0	7100.0	11,400	52	200FEE
		200	1900.0	7100.0	11,400	52	200FEE

† Watts loss at rated current.

Note: FC, 8ET, 12ET, 15ET, 20ET, 65EET and 75EET are available for replacement purposes on existing equipment.

FM, FMM, MT, MMT BS88

690 Vac/350-450 Vdc (IEC), 700 Vac/500 Vdc (UL), 160 to 710 A

BS88 style bolted tags high speed fuses for the protection of DC common bus, DC drives, power converters /rectifiers and reduced rated voltage starters.

Ratings

- Volts
 - FM: 690 Vac/450 Vdc (IEC); 700 Vac/500 Vdc (UL)
 - FMM: 690 Vac/450 Vdc (IEC); 700 Vac (UL)
 - MT and MMT: 690 Vac/350 Vdc (IEC); 700 Vac (UL)
- Amps 160-710 A
- IR
 - FM: 200 kA RMS Sym. (IEC/UL), 40 kA at 450 Vdc (IEC), 50 kA at 500 Vdc (UL)
 - FMM: 200 kA RMS Sym. (IEC/UL), 40 kA at 450 Vdc (IEC).
 - MT and MMT: 200 kA RMS Sym. (IEC/UL), 40 kA at 350 Vdc (IEC).

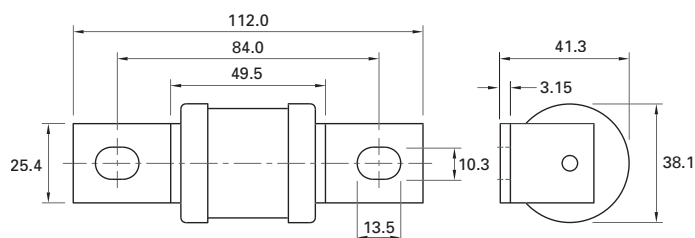
Operating class aR

Agency information

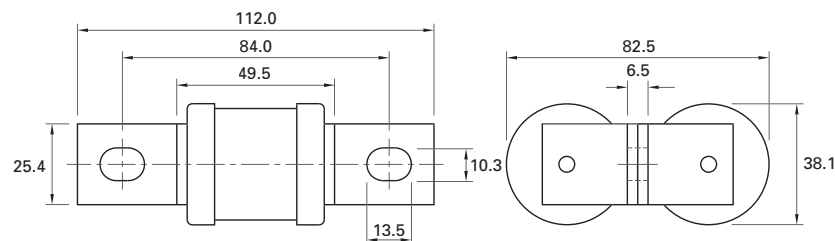
- Designed and tested to BS88 Part 4 and IEC 60269 Part 4
- UL Recognized MT and MMT 350 Vdc (IEC) rating*
- CCC for FM and FMM
- CE

Consult your Bussmann series product representative for UL Recognized status.

Dimensions — mm



FM, MT — indicator optional



FMM, MMT — indicator optional



For details on electrical characteristics, contact Application Engineering and ask for data sheets: 5785314 (FM), 5785313 (MT), 5785292 (FMM), 5785311 (MMT)

FM, FMM, MT, MMT BS88

690 Vac/350-450 Vdc (IEC), 700 Vac/500 Vdc (UL), 160 to 710 A

Fuse symbol	Rated voltage	Rated current (amps)	I ² t (A ² s)			Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 415 Vac	Clearing at 660 Vac		
FM	690 Vac/450 Vdc (IEC)	180	1400	7500	13,500	40	180FM
		200	2600	10,500	18,500	40	200FM
		225	3700	14,500	26,500	44	225FM
		250	5200	20,500	37,500	48	250FM
	700 Vac/500 Vdc (UL)	280	7000	30,500	55,000	48	280FM
		315	10,000	40,000	77,000	55	315FM
		350	15,000	60,000	105,000	55	350FM
		400	10,000	40,000	72,500	85	400FMM
FMM	690 Vac/450 Vdc (IEC)	450	15,000	60,000	105,000	90	450FMM
		500	20,000	82,000	150,000	100	500FMM
		550	30,000	120,000	215,000	100	550FMM
		630	45,000	180,000	310,000	100	630FMM
	700 Vac (UL)	700	60,000	245,000	420,000	120	700FMM
		160	2400	15,000	25,000	26	160MT
MT	690 Vac/350 Vdc (IEC)	180	3800	25,000	38,000	26	180MT
		200	6000	40,000	58,000	27	200MT
		250	11,500	80,000	110,000	32	250MT
		280	16,500	100,000	150,000	35	280MT
	700 Vac (UL)	315	19,000	125,000	180,000	42	315MT
		355	22,000	160,000	200,000	51	355MT
MMT	690 Vac/350 Vdc (IEC)	180	1650	12,000	18,000	42	180MMT
		200	2200	16,000	23,000	42	200MMT
		225	3700	26,000	40,000	42	225MMT
		280	6600	47,000	70,000	47	280MMT
		315	8600	62,000	91,000	51	315MMT
		355	13,500	97,000	140,000	54	355MMT
	700 Vac (UL)	400	21,000	150,000	220,000	60	400MMT
		450	30,000	220,000	320,000	57	450MMT
		500	42,000	300,000	450,000	64	500MMT
		560	60,000	430,000	640,000	64	560MMT
		630	68,500	500,000	720,000	86	630MMT
		710	78,000	600,000	850,000	105	710MMT

† Watts loss at rated current.

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 5785314 (FM), 5785313 (MT), 5785292 (FMM), 5785311 (MMT)

BS 88 Accessories

Trip indicator

Trip-indicator fuses are available for use in parallel with the main BS88-4 fuses. They can either be attached to the associated fuse or mounted separately in panel mounted fuse clips. Push-on adapters with microswitch (catalog numbers MAI and MBI) are available for use with the trip indicator to provide a means for remote indication.

Fuse ratings of 20 A and below cannot usually accommodate a trip fuse in parallel.

When a trip-indicator is to be attached to the main fuse, an accessory pack comprising a pair of mounting clips and an appropriate trip indicator is required. The clips are snapped onto the fuse and the indicator is pressed into clips as shown below.

Trip indicator kit catalog numbers (indicator + clips)

For fuse symbol	Catalog no.
ET	EC-600
EET	EC-600
FE	EC-600
FEE	EC-600
LET	EC-250
FM	MC-600
FMM	MC-600
LMT	MC-250
LMMT	MC-250

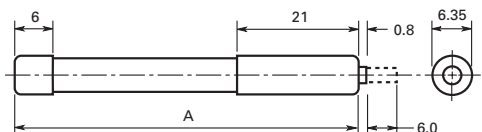


Indicator only

Catalog no.	Rated current	Dim. 'A' (mm)
TI250	250	37.6
TI500	500	47.5
TI600	600	55.7
TI700	700	61.8
TI1100	1100	98.4
TI1500	1500	120.8
TI2000	2000	147.5
TI2500	2500	198.3



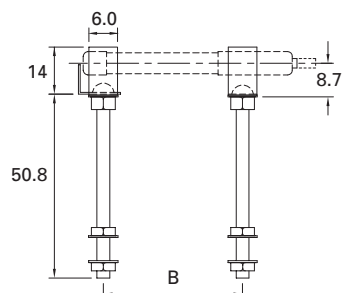
Indicator dimensions — mm



Indicator panel mount clips

CL1 panel mount fuse clips are available for mounting a trip-indicator directly to a PCB or insulated panel, or when mounting directly on the fuse is impractical. Order catalog number CL1.

CL1 dimensions — mm



Microswitches

Microswitch/adapter: MAI and MBI

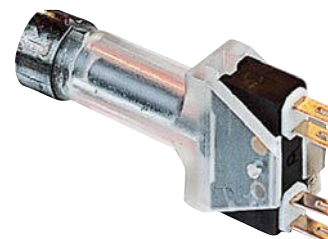
To provide a means of remote indication with the trip indicators, we offer two microswitch/adapters. The microswitches are provided with double pole, single throw contacts, having both a normally open (NO) and a normally closed (NC) position. A special material is used in the construction of the adapter to provide reliable operation in the temperatures ranges associated with standard operating conditions and during fuse operation.

Catalog no.	Description	Terminal orientation
MAI	Trip indicator adapter and microswitch	Back
MBI	Trip indicator adapter and microswitch	Side

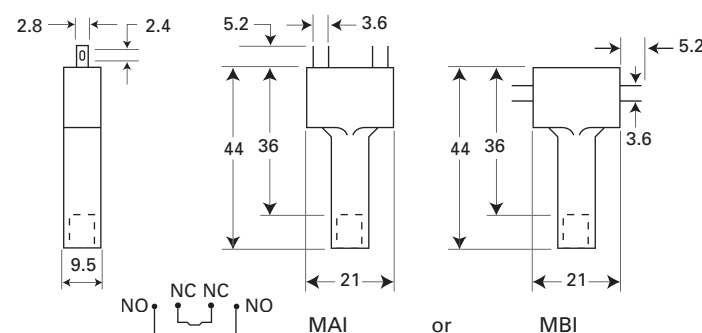
Microswitch ratings (MAI and MBI)

Terminals	Quick connect
Current rating	
AC 50/60 Hz resistive load	4 A @ 250 V RMS 6 A @ 127 V RMS
DC, resistive load	0.7 A @ 110 Vdc 2 A @ 30 Vdc
Maximum working voltage	
Contact-to-contact (RMS)	1000 V 1500 V
Maximum DC volts	110 Vdc

High speed fuses



Microswitch/adapter dimensions — mm



FWA Ferrule

150 Vac/dc (UL), 10x38mm and 21x51mm, 5 to 60 A

Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters /rectifiers and reduced rated voltage starters.

Ratings

- Volts 150 Vac/dc (UL)
- Amps 5-60 A
- IR
 - 200 kA RMS Sym.
 - 50 kA DC at 150 Vdc

Operating class aR

Agency information

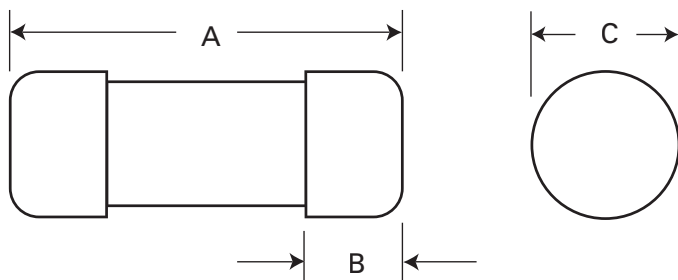
- UL Recognized, JFHR2, E91958
- CE



Fuse size	Rated voltage	Rated current (amps)	I²t (A²s)		Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 150 Vac		
10x38mm (13/32"x1-1/2")	150 Vac/dc (UL)	5	1.6	8	2.0	FWA-5A10F
		10	3.6	16	2.7	FWA-10A10F
		15	14.0	50	3.3	FWA-15A10F
		20	33.0	130	3.8	FWA-20A10F
		25	58.0	220	4.9	FWA-25A10F
30		100.0	400	4.9	FWA-30A10F	
35		75.0	800	4.5	FWA-35A21F	
40		100.0	1000	5.1	FWA-40A21F	
45		130.0	1300	6.0	FWA-45A21F	
50		170.0	1600	7.3	FWA-50A21F	
60		250.0	2400	8.0	FWA-60A21F	

† Watts loss at rated current.

Dimensions — in (mm)



Amp range	A	B	C
5-30	1.5 (38.1)	0.38 (9.5)	0.41 (10.3)
35-60	2.0 (50.8)	0.63 (15.9)	0.81 (20.6)

For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720003,5785317 (5-30 A), 5785305 (35-60 A)

FWX Ferrule

250 Vac/dc (UL), 14x51mm, 1 to 50 A

Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers rated voltage starters.

Ratings

- Volts
 - 250 Vac (UL, all ratings)
 - 250 Vdc (UL, 5-50 A only)
- Amps 1-50 A
- IR
 - 200 kA RMS Sym. (UL, all ratings)
 - 50 kA at 250 Vdc (UL, 5-50 A only)

Operating class aR

Agency information

- UL Recognized, JFHR2, E91958 1-50 A
- CSA Class 1422-30, 1422-90 (53787) 5-30 A
- CE

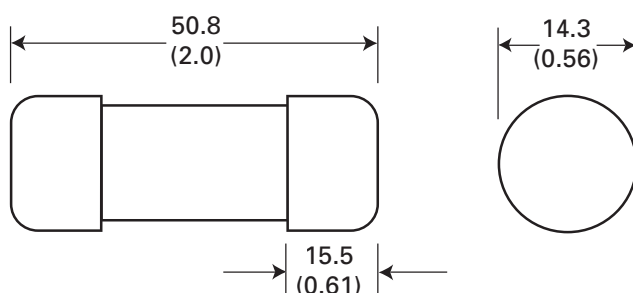


High speed fuses

Fuse size	Rated voltage	Rated current(amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 250 Vac		
14x51mm (9/16"x2")	250 Vac (UL)	1	0.03	0.40	5.7	FWX-1A14F
		2	0.08	0.10	8.6	FWX-2A14F
		3	0.11	0.26	2.8	FWX-3A14F
		4	0.1	0.23	3.0	FWX-4A14F
	250 Vac/dc (UL)	5	1.6	13.00	1.3	FWX-5A14F
		10	3.6	24.00	3.4	FWX-10A14F
		15	14.0	83.00	3.8	FWX-15A14F
		20	33.0	200.00	4.6	FWX-20A14F
		25	58.0	300.00	5.3	FWX-25A14F
		30	100.0	500.00	5.9	FWX-30A14F
		50	200.0	1800.00	5.7	FWX-50A14F

† Watts loss at rated current.

Dimensions — mm (in)



For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720006, 5785302

FWH Ferrule

500 Vac (UL), 6x32mm, 0.25 to 30 A



Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters.

Ratings

- Volts
 - 500 Vac (UL — 0.25-1 A and 3.15-30 A)
 - 1000 Vac (UL — 2 A)
 - 600 Vdc (UL — 1-5 A)
- Amps 0.25-30 A
- IR
 - 50 kA AC (0.25-1 A and 3.15-20 A)
 - 30 kA AC (2 A)
 - 20 kA AC (25-30 A)¹
 - 50 kA DC (1-5 A)

¹ Tested at PF = 76%.

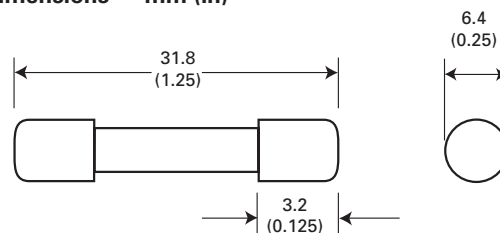
Operating class aR

Agency information

- UL Recognized, JFHR2, E91958 (0.25-7 A) and JDYX2, E19180 (10-30 A)
- CSA Component Acceptance Class 1422-30, 1422-90 (53787) 0.25-7 A
- RoHS compliant
- CE



Dimensions — mm (in)



Opening times

Amp range	150%	200%	300%	Min IR
0.25-7	>30 min	>30 min	≤ 10 sec	300 %
10-30				200 %

Amps	Rated voltage		I ² t (A ² s)		Watts loss (W)†	Catalog no.	
	Vac	Vdc	Pre-arcing	Clearing @ 500Vac		Standard	RoHS compliant
0.25	500	—	0.01	0.05	2.7	—	FWH-.250A6F
0.5			0.05	0.25	1.2		FWH-.500A6F
1			0.4	2	1.7		FWH-001A6F
2			1.3	3.5	3.2		FWH-002A6F
3.15	1000	600	3.1	7.7	2.9		FWH-3.15A6F
4			—	—	—		FWH-004A6F
5			15	40	2.1		FWH-005A6F
6.3			36	90	2.3		FWH-6.30A6F
7	500	—	50	125	2.5	FWH5-010A6F	FWH-007A6F
10			9.9	139	2.86		FWH5-010A6FR
12.5			20	60	3.53		FWH5-12-5A6FR
15			44	146	3.08		FWH5-015A6FR
16			48	177	4.48		FWH5-016A6FR
20			75	259	4.26		FWH5-020A6FR
25			126	345	—		FWH-025A6FR
30			145	430	—		FWH-030A6FR

† Watts loss at rated current.

FWH Ferrule

500 Vac/ Vdc (UL), 14x51mm, 1 to 30 A

Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters.

Ratings

- Volts
 - 500 Vac (UL, all ratings)
 - 500 Vdc (UL, 5-30 A only)
- Amps 1-30 A
- IR
 - 200 kA RMS Sym. all ratings
 - 50 kA at 500 Vdc 5-30 A only

Operating class aR

Agency information

- UL Recognized 1-30 A
- CSA Class 1422-30, (53787) 5-30 A
- CE

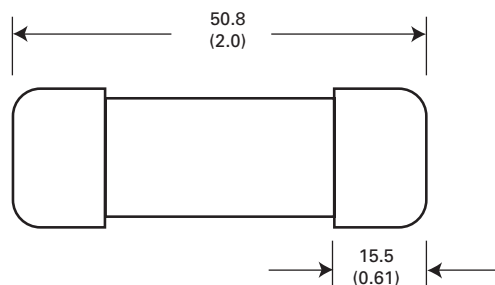


High speed fuses

Fuse size	Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 500 Vac		
14x51mm (9/16"x2")	500 Vac (UL)	1	0.04	0.2	5.7	FWH-1A14F
		2	0.08	0.1	8.7	FWH-2A14F
		3	0.11	0.2	2.8	FWH-3A14F
		4	0.10	0.2	3.0	FWH-4A14F
	500 Vac/dc (UL)	5	2.00	7.0	1.5	FWH-5A14F
		6	2.00	7.0	1.5	FWH-6A14F
		10	4.00	15.0	4.0	FWH-10A14F
		12	7.00	25.0	4.3	FWH-12A14F
		15	10.00	40.0	5.5	FWH-15A14F
		20	26.00	100.0	6.5	FWH-20A14F
		25	49.00	200.0	7.0	FWH-25A14F
		30	58.00	240.0	9.0	FWH-30A14F

† Watts loss at rated current.

Dimensions — mm (in)



For details on electrical characteristics, contact Application Engineering and ask for data sheets:720008, 5785298

4 — High speed fuses

FWC Ferrule

600-700 Vac/700 Vdc (UL), 10x38mm, 1 to 32 A

Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters.

Ratings

- Volts
 - 700 Vac/dc (UL, 1-4 A)
 - 600 Vac (UL, 6-32 A), 700 Vdc (UL, 6-25 A)
- Amps 1-32 A
- IR
 - 200 kA RMS Sym. at 600 Vac (6-32 A)
 - 200 kA RMS Sym. at 700 Vac (1-4 A)
 - 10 kA DC at 700 Vdc (1-25 A)



Operating class aR

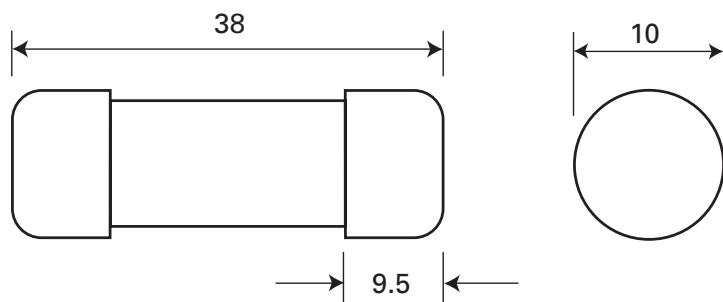
Agency information

- UL Recognized, JFHR8, E91958 6-32 A
- CSA Class 1422-30, (53787) 6-32 A
- CE

Fuse size	Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 600 Vac		
10x38mm (13/32"x1-1/2")	700 Vac/dc (UL)	1	0.2	1.2	0.5	FWC-1A10F
		2	0.5	3.0	1.2	FWC-2A10F
		3	1.6	11.0	1.5	FWC-3A10F
		4	5.2	32.0	1.5	FWC-4A10F
	600 Vac/700 Vdc (UL)	6	4.0	30.0	1.5	FWC-6A10F
		8	6.0	50.0	2.0	FWC-8A10F
		10	9.0	70.0	2.5	FWC-10A10F
		12	15.0	120.0	3.0	FWC-12A10F
		16	25.0	150.0	3.5	FWC-16A10F
		20	34.0	260.0	4.8	FWC-20A10F
		25	60.0	390.0	6.0	FWC-25A10F
		32	95.0	600.0	7.5	FWC-32A10F
	600 Vac (UL)					

† Watts loss at rated current.

Dimensions — mm



For details on electrical characteristics, contact Application Engineering and ask for data sheets:720011, 5785306

FWP Ferrule

690 Vac (IEC) 10x38mm, 4 to 32 A

Ferrule style Class gR high speed fuses for the protection of AC/DC drives and semiconductors.

Ratings

- Volts 690 Vac
- Amps 4-32 A
- IR
 - 200 kA RMS Sym.

Operating class gR

Agency information

- UL 248-13
- Designed and tested to IEC 60269, Part 4
- CE



High speed fuses

Fuse type	Fuse size	Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†		Catalog no.
				Pre-arcing	Clearing at 690 Vac	0.8I _n	I _n	
Without striker	10x38 mm	690 Vac (IEC)	4	5.6	17	1.13	2.05	FWP-4G10F
			6	16.0	48	1.56	3.0	FWP-6G10F
			8	4.3	38	0.97	1.68	FWP-8G10F
			10	6.6	59	1.20	2.09	FWP-10G10F
			12	9.6	84	1.69	2.99	FWP-12G10F
			16	17.0	150	2.31	4.27	FWP-16G10F
			20	23.5	200	2.86	5.35	FWP-20G10F
			25	60.2	512	2.94	5.52	FWP-25G10F
			32**	94.0	800	3.82	7.43	FWP-32G10F

† Watts loss at rated current.

**32 A rated current with 25mm² conductors, derate to 27 A with 6mm² conductors.

FWP Ferrule

**690 Vac (IEC), 700 Vac (UL), 600 - 700 Vdc (UL), 14x51mm,
1 to 50 A**

Ferrule style Class aR high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters. Available with or without striker.

Ratings

- Volts 690 Vac (IEC), 700 Vac/600 Vdc (UL) with striker (see table for striker version)
- Amps 1-50 A
- IR
 - 200 kA RMS Sym.
 - 50 kA at 800 Vdc (5-50 A non striker version)
 - 600 Vdc for striker version

Operating class aR

Agency information

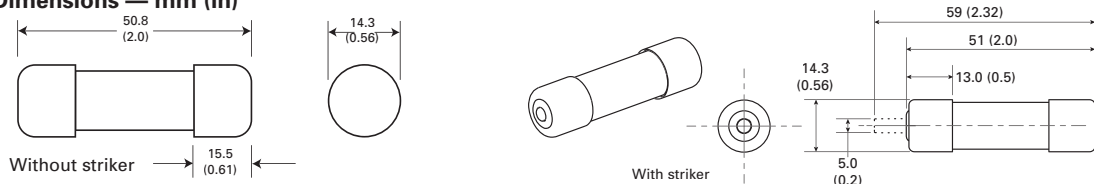
- UL Recognized, (without striker only) JFHR2, E91958
- CSA (without striker only) Class 1422-30, 1422-90 (53787)
- Designed and tested to IEC 60269, Part 4
- CE



Fuse type	Fuse size	Rated voltage	Rated current (amps)	I²t (A²s)		Watts loss (W)†	Catalog no.
				Pre-arcing	Clearing at 700 Vac		
Without striker	14x51mm (9/16" x2")	700 Vac (UL)	1	0.04	0.41	5.7	FWP-1A14F
			2	0.08	0.11	8.7	FWP-2A14F
			3	0.11	0.26	2.8	FWP-3A14F
			4	0.10	0.23	3.0	FWP-4A14F
		690 Vac (IEC) 700 Vac/dc (UL)	5	2.00	11.00	1.5	FWP-5A14F
			10	4.00	22.00	4.0	FWP-10A14F
			15	10.00	70.00	5.5	FWP-15A14F
			20	26.00	180.00	6.5	FWP-20A14F
			25	49.00	320.00	7.0	FWP-25A14F
			30	58.00	400.00	9.0	FWP-30A14F
			32	68.00	600.00	8.0	FWP-32A14F
			40	84.00	750.00	8.0	FWP-40A14F
			50	200.00	1800.00	9.0	FWP-50A14F
		700 Vac/600 Vdc (UL)	10	4.00	32.00	2.0	FWP-10A14FI
			15	7.00	63.00	4.0	FWP-15A14FI
			20	26.00	234.00	4.0	FWP-20A14FI
			25	42.00	378.00	4.0	FWP-25A14FI
			30	52.00	468.00	6.0	FWP-30A14FI
			32	68.00	600.00	8.0	FWP-32A14FI
40	84.00		750.00	8.0	FWP-40A14FI		
50	200.00		1800.00	9.0	FWP-50A14FI		
With striker	700 Vac/600 Vdc (UL)	10	4.00	32.00	2.0	FWP-10A14FI	
		15	7.00	63.00	4.0	FWP-15A14FI	
		20	26.00	234.00	4.0	FWP-20A14FI	
		25	42.00	378.00	4.0	FWP-25A14FI	
		30	52.00	468.00	6.0	FWP-30A14FI	
		32	68.00	600.00	8.0	FWP-32A14FI	
		40	84.00	750.00	8.0	FWP-40A14FI	
		50	200.00	1800.00	9.0	FWP-50A14FI	

† Watts loss at rated current.

Dimensions — mm (in)



For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720025, 5781724 fuses without striker; 5785566 fuses with striker

FWP Ferrule

690 Vac 14x51mm, 1 to 50 A

Ferrule style Class gR high speed fuses for the protection of AC/DC drives, semiconductors and high voltage auxiliary circuits in electric vehicles. Available with or without striker.

Ratings

- Volts 690 Vac
- Amps 4-50 A
- IR 200 kA RMS Sym.

Operating class gR

Agency information

- UL 248-13
- Designed and tested to IEC 60269, Part 4
- CE

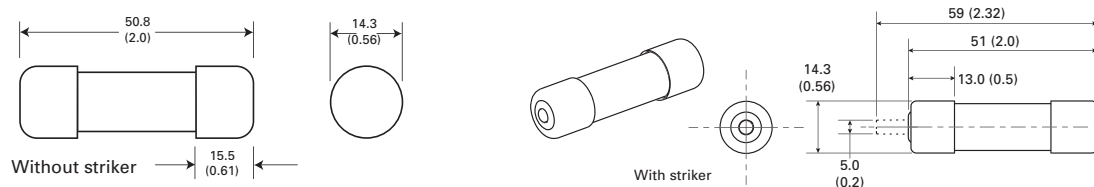


High speed fuses

Fuse type	Fuse size	Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†		Catalog no.
				Pre-arcing	Clearing at 690 Vac	0.8I _n	I _n	
Without striker	14x51mm (9/16"x2")	690 Vac (UL/IEC)	4	5.6	17	1.56	2.94	FWP-4G14F
			6	16	48	2.25	4.2	FWP-6G14F
			8	3.8	30	1.18	2.0	FWP-8G14F
			10	5.9	47	1.41	2.52	FWP-10G14F
			12	8.4	68	1.95	3.54	FWP-12G14F
			16	15	120	5.67	4.83	FWP-16G14F
			20	27	170	2.91	5.4	FWP-20G14F
			25	53	333	3.38	6.0	FWP-25G14F
			32	108	679	3.72	6.93	FWP-32G14F
			40	211	1331	4.13	7.52	FWP-40G14F
With striker	14x51mm (9/16"x2")	690 Vac (UL/IEC)	50	350	2200	5.36	9.8	FWP-50G14F
			8	3.8	30	1.18	2.0	FWP-8G14FI
			10	5.9	47	1.41	2.52	FWP-10G14FI
			12	8.4	68	1.95	3.54	FWP-12G14FI
			16	15	120	5.67	4.83	FWP-16G14FI
			20	27	170	2.91	5.4	FWP-20G14FI
			25	53	333	3.38	6.0	FWP-25G14FI
			32	108	679	3.72	6.93	FWP-32G14FI
			40	211	1331	4.13	7.52	FWP-40G14FI
			50	350	2200	5.36	9.8	FWP-50G14FI

† Watts loss at rated current.

Dimensions — mm (in)



FWP Ferrule

700 Vac/dc (UL), 22x58mm, 20 to 100 A

Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters. Available with or without striker.

Ratings

- Volts 700 Vac/dc (UL)
- Amps 20-100 A
- IR
 - 200 kA RMS Sym.
 - 50 kA at 700 Vdc, L/R 5 ms

Operating class aR

Agency information

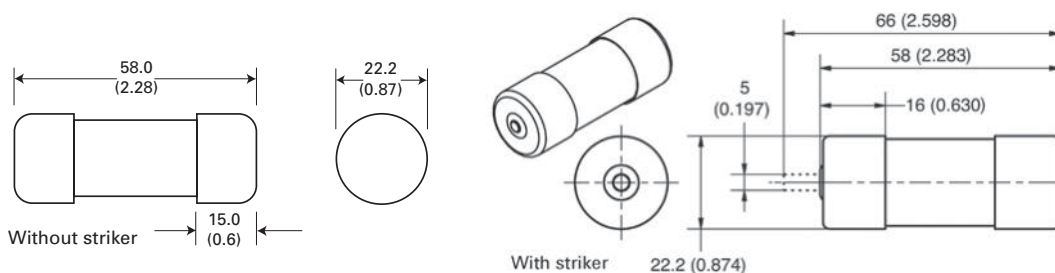
- UL Recognized, (without striker only) JFHR2, E91958
- CSA (without striker only) Class 1422-30, 1422-90 (53787)
- CE



Fuse type	Fuse size	Rated voltage	Rated current (amps)	I²t (A²s)		Watts loss (W)†	Catalog no.
				Pre-arcing	Clearing at 700 Vac		
Without striker	22x58mm (7/8"x2-9/32")	700 Vac/dc (UL)	20	23.0	330	5.0	FWP-20A22F
			25	37.0	530	6.0	FWP-25A22F
			32	55.0	780	8.0	FWP-32A22F
			40	68.0	960	12.0	FWP-40A22F
			50	155.0	2200	12.5	FWP-50A22F
			63	280.0	4000	15.0	FWP-63A22F
			80	550.0	7800	15.0	FWP-80A22F
			100	1100.0	15,600	16.5	FWP-100A22F
With striker			20	19.0	260	5.0	FWP-20A22FI
			25	34.0	410	6.0	FWP-25A22FI
			32	53.5	605	8.0	FWP-32A22FI
			40	68.0	750	9.0	FWP-40A22FI
			50	135.0	1600	9.5	FWP-50A22FI
			63	280.0	3080	11.0	FWP-63A22FI
			80	600.0	6600	13.5	FWP-80A22FI
			100	1100.0	12,500	16.0	FWP-100A22FI

† Watts loss at rated current.

Dimensions — mm (in)



For details on electrical characteristics, contact Application Engineering and ask for data sheets: 720026, 5781723

FWP Ferrule

690 Vac, 500 Vdc 22x58mm, 20 to 100 A

Ferrule style Class gR high speed fuses for the protection of AC/DC drives, semiconductors and high voltage auxiliary circuits in electric vehicles. Available with or without striker.

Ratings

- Volts
 - 690 Vac
 - 500 Vdc
- Amps 20-100 A
- IR
 - 200 kA RMS Sym.
 - 50 kA DC

Operating class gR

Agency information

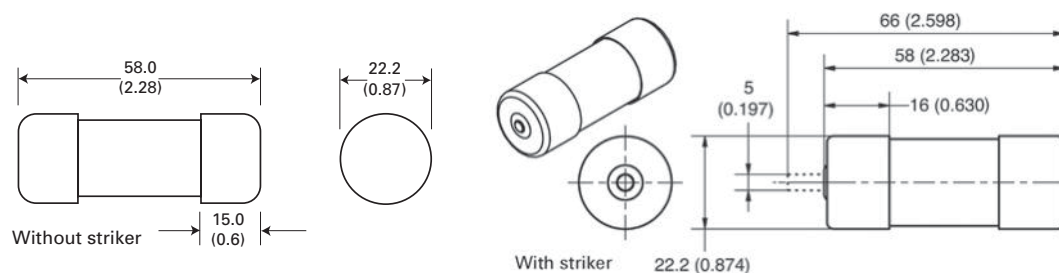
- UL 248-13
- Designed and tested to IEC 60269, Part 4
- CE



Fuse type	Fuse size	Rated voltage	Rated current (amps)	I ² t (A ² s)		Watts loss (W)†		Catalog no.
				Pre-arcing	Clearing at 690 Vac	0.8I _n	I _n	
Without striker	22x58 mm (7/8"x2-9/32")	690 Vac, 500Vdc	20	24	154	3.23	6.00	FWP-20G22F
			25	43	274	3.66	6.65	FWP-25G22F
			32	97	616	4.86	9.21	FWP-32G22F
			40	180	899	4.50	8.24	FWP-40G22F
			50	273	1362	6.26	11.85	FWP-50G22F
			63	516	2575	7.35	13.80	FWP-63G22F
			80	1092	5448	8.40	14.00	FWP-80G22F
			100	2065	10,300	9.40	17.70	FWP-100G22F
With striker	22x58 mm (7/8"x2-9/32")	690 Vac, 500Vdc	20	24	154	3.23	6.00	FWP-20G22FI
			25	43	274	3.66	6.65	FWP-25G22FI
			32	97	616	4.86	9.21	FWP-32G22FI
			40	180	899	4.50	8.24	FWP-40G22FI
			50	273	1362	6.26	11.85	FWP-50G22FI
			63	516	2575	7.35	13.80	FWP-63G22FI
			80	1092	5448	8.40	14.00	FWP-80G22FI
			100	2065	10,300	9.40	17.70	FWP-100G22FI

† Watts loss at rated current.

Dimensions — mm (in)



High speed fuses

FWK Ferrule

750 Vdc (IEC), 20x127mm and 25x146mm, 5 to 60 A

Ferrule style high speed fuses for the protection of DC common bus, DC drives, power converters/rectifiers and reduced rated voltage starters.

Ratings

- Volts 750 Vdc (IEC)
- Amps
 - 5-30 A (20x127mm)
 - 35-60 A (25x146mm)
- IR 50 kA at 750 Vdc, L/R 10-15 ms

Operating class gG

Agency information

- CE



Fuse size	Rated voltage	Rated current (amps)	I²t (A²s)		Watts loss (W)†	Catalog no.
			Pre-arcing	Clearing at 750 Vac		
20x127mm (13/32"x5")	750 Vdc (IEC)	5	8.5	16	6.7	FWK-5A20F
		8	50	100	8.8	FWK-8A20F
		10	95	200	8.5	FWK-10A20F
		15	100	240	5.0	FWK-15A20F
		20	125	315	7.8	FWK-20A20F
		25	400	1100	6.5	FWK-25A20F
		30	800	2600	6.5	FWK-30A20F
		35	1300	4600	6.0	FWK-35A25F
25x146mm (1"x5-3/4")		40	1600	5300	6.8	FWK-40A25F
		50	3100	12,000	7.3	FWK-50A25F
		60	5900	24,000	7.7	FWK-60A25F

† Watts loss at rated current.

Dimensions — mm (in)

